

THE BRITISH JOURNAL OF DERMATOLOGY

NOVEMBER 1955

NECROBIOSIS LIPOIDICA.

P. J. HARE,

University College Hospital, London.

PART I: GENERAL REVIEW OF THE LITERATURE.

Early Description of Necrobiosis Lipoidica.

NECROBIOSIS lipoidica-diabeticorum was originally thought to be a skin disease peculiar to diabetics. The name was suggested by Urbach (1932) when he described what he regarded as "a new diabetic metabolic dermatosis" in a woman of 44. The lesions were confined to the lower legs and were sharply defined areas with irregular outlines, bluish-violet in colour and with yellowish, hard and depressed centres. The most advanced lesions were scaly and telangiectatic, with central atrophy. Histologically, areas of necrobiosis were observed in the middle and deep thirds of the cutis. These areas contained droplets of fat lying between the collagen bundles. In the adjacent connective tissue there were accumulations of lymphocytes and fibroblasts. The dermal blood vessels showed thickening of their walls and intimal proliferation. Later investigation revealed a few foam cells and foreign body giant cells at the edges of the necrobiotic zones. The blood cholesterol was 270 mg. %. Urbach thought that the disease was due to damage of the blood vessels of the skin caused by hypothetical circulating toxins arising in diabetes: the extracellular deposit of fat was due to imbibition of lipoid from the blood, where it was present in excess.

Oppenheim (1932) claimed that he had already described this disease in 1929, although at that time he had not examined his biopsies for fat. His patient, a man with severe diabetes, had a maximum blood cholesterol level of 275 mg. %. He also thought that the changes were due to diabetic toxins, but he regarded the point of attack as the dermis itself, resulting in its fatty degeneration.

Later (1938) he spoke of three stages—initial inflammation, followed by fatty change and final atrophy. To describe these changes, he proposed the name “*dermatitis atrophicans lipoides diabetica*” and he insisted that the condition was always due to diabetes.

In retrospect, it seems possible that a case described by Goldstein and Harris in 1927 was one of *necrobiosis lipoidica diabetorum* of the legs associated with diabetic xanthoma of the palms and elbows. The latter lesions disappeared when control of the diabetes was established, but those on the legs persisted unchanged. Another possible case was reported by MacCormac in 1930. His patient was a diabetic woman of 34 with a polycyclic area on the left ankle showing atrophy, some crusting and pit-like erosions. Balbi described the third named case in 1933, in a diabetic of 55, with elevated blood levels of neutral fats, phosphatides and cholesterol. Histologically, Balbi found marked obliterative vascular changes to which he attributed the dermal *necrobiosis*. He also thought that the hyperlipaemia might play a rôle in causing the vascular damage. Gottron, however, reported a case in 1933 in which the blood cholesterol was normal. Zeisler and Caro, describing the first named American case in 1934, were struck by the severity of the histological vascular changes.

In Klaber's (1934) patient the blood cholesterol level was normal and although vascular changes were present in the skin sections, they were “not as striking” as in Balbi's case. The blood pressure, retinal vessels and radiographs of the limbs for calcified vessels were normal. Klaber found foam cells in his sections and doubly refractile particles which he thought might consist of cholesterol. He inferred that there was no sharp distinction between *necrobiosis lipoidica diabetorum* and xanthoma. In discussing a case of diabetic xanthoma with purpura and necrosis, Ferguson Smith (1934) remarked that the changes probably did not differ from those in *necrobiosis lipoidica* except in degree. Peck (1936) regarded both xanthoma and *necrobiosis lipoidica* as peculiar inflammatory lesions resulting from a disturbance of fat metabolism. Feldman (1936) agreed, thinking that *necrobiosis lipoidica* began as a xanthoma and ended in necrosis. Usher and Rabinowitch (1937) thought that the two conditions were clinically dissimilar. However, they regarded the fatty changes in *necrobiosis lipoidica* as of sufficient importance to merit a detailed chemical analysis of the lipoids in an excised lesion. They found the total quantity of fat to be similar to that in xanthoma but with a different distribution of the constituents. A case described by Gougerot, Grupper and Chapuis (1949) showed both diabetic xanthoma and *necrobiosis lipoidica*. Treatment of the diabetes resulted in the rapid clearance of the lesions of xanthoma, but the *necrobiotic* areas persisted without change. If the leg lesions in the case of Goldstein and Harris (1927) are accepted as *necrobiosis lipoidica*, their case forms a complete parallel. The association is rare.

Michelson and Laymon (1934) described a case in a diabetic girl of 10.

Histologically the deep blood vessels showed swelling and proliferation of the intima to the point of occlusion. They regarded the vascular changes as primary and likened necrobiosis lipoidica to an abortive form of diabetic gangrene. External trauma appeared to play a part. They said that comparable histological changes were to be found in the skin adjacent to areas of gangrene, diabetic or otherwise. Their case for primary vascular damage was weakened by Laymon's statement (1937) that analogous appearances were seen microscopically around furuncles and similar lesions in non-diabetics. Michelson (1936) spoke of a whole range of histological and clinical appearances which would be described as necrobiosis lipoidica, approximating to gangrene at one extreme and to xanthoma at the other. Laymon (1936) also described necrobiosis lipoidica as a local manifestation of a general lipidosis.

Cases Without Diabetes.

The doubtful significance of the part played by abnormal fat metabolism in the production of the lesions of necrobiosis lipoidica was further brought into question by the discovery of cases independent of diabetes mellitus. The first of these to be recognised was reported by Goldsmith (1935) whose patient had neither glycosuria nor abnormal glucose tolerance. The blood cholesterol was 150 mg.%. Her lesions were clinically and histologically indistinguishable from the prototypes of necrobiosis lipoidica diabeticorum. There was a strong family history of tuberculosis. The patient had had erythema nodosum and thrombophlebitis in the leg which later became affected by necrobiosis lipoidica. She was sensitive to tuberculin, the injection of which also caused focal reactions in the skin lesions (Goldsmith, 1945). Goldsmith was inclined to believe that necrobiosis lipoidica was primarily an inflammatory condition and that the necrobiosis was the result rather than the cause of the cellular infiltration. Nicholau (1936) expressed a similar view, being struck by the rarity of necrobiosis lipoidica *vis-à-vis* diabetes. Goldsmith (1936) likened the process to sclerodermiform erythema induratum. Prosser Thomas (1946) described the healing of non-diabetic cases of necrobiosis lipoidica with large doses of calciferol as used in the treatment of tuberculosis of the skin. He agreed, however, that calciferol did not improve the lesions of Bazin's disease.

Many other cases of necrobiosis in non-diabetics have been reported, e.g. by Schuermann (1938*a* and *b*), Boldt (1939) Wallace (1944*b*) Kaalund-Jørgensen (1948), Roederer, Woringer and Burgun (1949). The case shown by Gross in 1934 as "morphoea with xanthomatous infiltration" was referred to as necrobiosis lipoidica without diabetes in 1939. Dowling's case, diagnosed in 1928 as annular sarcoid, was demonstrated in 1946 as non-diabetic necrobiosis lipoidica. It was one of those cases referred to by MacCormac (1930) as belonging

to a "definite clinical group". The latter included those of Stowers (1921), MacCormac (1921), Goldsmith (1928) and Barber (1929).

Hildebrand, Montgomery and Rynearson (1940) stated that in 17.8% of reported cases of necrobiosis lipoidica, the skin lesions had preceded the onset of diabetes mellitus. It was shown that the average interval between the appearance of skin lesions and of diabetic symptoms, when they occurred in that order, was about three years and three months. Goldsmith's non-diabetic case, however, was followed for at least 12 years without the detection of diabetes. Nomland's (1948) case was of 16 years' duration, but without diabetic symptoms, glycosuria or abnormality of the glucose tolerance test. Dowling's (1936) case persisted for 30 years without diabetes.

There is no agreement in the literature on the type or severity of the diabetes associated with necrobiosis lipoidica. The latter has been described in diabetic children and in the aged developing diabetes in adult life. Hitch (1937) believed that the occurrence of necrobiosis lipoidica was independent of the severity of the diabetes or the extent of the hyperglycaemia. Gottron (1938) associated it with mild diabetes and thought that in any case the severity of the diabetes had no bearing on the production of the skin changes. Hildebrand *et al.* (1940), however, found that of reported cases, 70% were in diabetics classed as moderately severe or severe. They felt that the duration and previous control of the diabetes was perhaps of greater significance. Lyell and Whittle (1950) have opposed this view, citing a case developing in a woman of 26 whose diabetes, of 12 years' duration, had always been stabilized. It is admittedly not yet clear to what extent "control" of diabetes prevents the occurrence of certain complications; in Whittle's case the patient had also developed bilateral cataract.

Mitchell-Heggs and Feiwei (1948) regarded the diabetic and non-diabetic forms as a single entity in the production of which diabetes was a possible but not invariable factor. Dowling (1946) questioned the real relationship of the two forms and thought that they could be separated morphologically. Goldsmith found them clinically indistinguishable. Gottron (1938) thought that necrobiosis lipoidica was not specifically diabetic in origin, but that in diabetic cases it was due to vascular changes occurring in that disease. He found evidence of instability in the control of the peripheral circulation in his cases of necrobiosis lipoidica and mentioned the frequent occurrence of "vasomotor stigmata" and labile hypertension in these cases and indeed in diabetics in general. Boldt (1939) supported this functional interpretation and brought forward further evidence of vasomotor disturbances in 16 cases of necrobiosis lipoidica, 7 of which were non-diabetic. Satenstein (1939) said that as necrobiosis lipoidica was an essentially vascular disorder further disease due to abnormality of blood vessels, such as gangrene, was to be anticipated in such cases. He had seen this in one instance (but it appears to be exceptional). Ginsberg (1941) described a case of diabetic necrobiosis lipoidica in a woman of 24 who already

showed radiographic evidence of calcified vessels in the legs. Kaalund-Jørgensen (1948) found vascular changes histologically in most cases of necrobiosis lipoidica, whether diabetic or non-diabetic. From clinical examination including oscillometry, however, he was unable to produce evidence of widespread vascular impairment. Weidman (1939, 1942, 1948) repeatedly expressed the opinion that in necrobiotic skin conditions the process was analogous to infarction. Roederer, Woringer and Burgun (1949) felt that necrobiosis lipoidica was a syndrome due to arteriolitis, whether of diabetic or other origin. They attributed the relative frequency of the disease in women to their predisposition to vascular stasis in the skin.

Morphological Variants.

In the course of time lesions with the histology of necrobiosis but with a variety of clinical appearances were described, making it apparent that the original descriptions of Urbach and Oppenheim were too stereotyped. The history of the recognition of these clinical varieties will not be discussed. Degos (1951) has summarized them as :

- (i) sclerodermiform, with polycyclic edges, depressed centres, chamois yellow in colour, with telangiectasis and sometimes ulceration ;
- (ii) syphiloid, simulating tertiary noduloulcerative lues ;
- (iii) granuloma annulare-like ;
- (iv) ulcers with erythematous borders ;
- (v) scaly patches with polycyclic borders ;
- (vi) resembling angiodermatitis (" dermite ochre ").

The type resembling granuloma annulare has aroused interest since in granuloma annulare foci of necrobiosis and a chronic inflammatory infiltrate may be seen histologically. Ketron (1935) suggested the possibility that the lesion of necrobiosis lipoidica was that of granuloma annulare with an excessive deposit of fat resulting from diabetic hyperlipaemia. Bernstein (1937) examined four cases of granuloma annulare, one in a diabetic, and finding no fatty change histologically, concluded that there was no microchemical relationship between the two conditions. In 1941, however, Ellis demonstrated fat in necrobiotic zones in a case he regarded as granuloma annulare, and suggested that there was a connection between necrobiosis lipoidica and granuloma annulare. Oppenheim (1941) said that he would not confuse the two, which were totally different clinically and histologically.

Ellis and Kirby-Smith (1942) published an extensive clinical and histological comparison of necrobiosis lipoidica and granuloma annulare, and concluded that the two conditions might be variants of the same disease. In summary, they

found that both diseases occurred in patients in the same age range and on any part of the skin. Granuloma annulare was more common on the upper extremities and necrobiosis lipoidica on the lower. Both diseases were chronic, although necrobiosis lipoidica often persisted longer than granuloma annulare. Atrophy and ulceration were unusual in the latter, and the former was more frequently associated with diabetes. They found vascular alterations histologically in both, but fibrosis was more evident in necrobiosis lipoidica than in granuloma annulare. The same elements were found in the cellular infiltrates in both diseases. Fibroblasts and giant cells were relatively more common in necrobiosis lipoidica. Palisading of histiocytes around necrobiotic foci occurred in both, although it was more characteristic of granuloma annulare. The areas of necrobiosis were more extensive but less well defined in necrobiosis lipoidica than in granuloma annulare, but lipid droplets could be found in these areas in both diseases.

Laymon and Fisher (1949) concluded that although there were cases in which both the clinical and histological features of the two diseases were almost identical, they were separate entities rather than variants of the same disease. Woringer (1950) felt that the two diseases were separate and that in granuloma annulare the changes were probably not vascular but inflammatory in origin. Fat might arise through the degeneration of the cellular infiltrate, as in a caseating tubercle. One of the histological aspects of granuloma annulare was constituted by "necrobiosis lipoidica", using this as a *histological* term to describe a group of changes provoked by necrosis of connective tissue, which could arise in a variety of clinical disorders.

The occurrence of fatty changes in the necrobiotic areas in some cases of granuloma annulare is now widely recognized. An extreme view was expressed by Nomland (1951) who stated that 50% of cases of granuloma annulare did not show the text-book histological picture. All that did also had "fatty infiltration" surrounding the "necrotic" areas.

Our understanding of the nature of necrobiosis lipoidica is not greatly advanced by comparing it with granuloma annulare, since the origin of the latter is totally obscure. The extensive literature on granuloma annulare will not be discussed. It should be mentioned that an association with tuberculosis was long suspected (Graham Little, 1908), but it is no longer widely believed to exist. Jacobi (1931) suggested a vascular origin and more recently Gougerot (1950) classed granuloma annulare with his "allergides". Grupper *et al.* (1950) regarded it as a "collagenosis", the inclusion of lipid characterizing "dysmetabolic granuloma annulare" which constituted necrobiosis lipoidica of the granuloma annulare type. Others, e.g. Bolgert (1944), drew attention to similarities between granuloma annulare and rheumatic nodules. It remains uncertain, however, how the latter arise and whether the process is primarily inflammatory or degenerative. Classical necrobiosis lipoidica and classical granuloma annulare

are rarely seen together in the same patient (Dowling, 1953) and there appears to be little clinical evidence of any connection between necrobiosis lipoidica and the rheumatic group of diseases.

Necrobiosis Maculosa.

Miescher (1949) described a case in a non-diabetic woman of 66 under the title "necrobiosis maculosa". The clinical aspect was that of necrobiosis lipoidica, but the histology was thought to be that of granuloma annulare, i.e. areas of necrobiosis of the dermis with a chronic inflammatory infiltrate around them, but without fatty change. No marked changes were seen in the dermal blood vessels apart from perivascular infiltration. Miescher stated that "the symptom of necrobiosis creates connections between necrobiosis maculosa, necrobiosis lipoidica, granuloma annulare and noduli rheumatici, and points towards an analogous pathogenesis for all these diseases".

Comparable cases had previously been published. Bruce Jones (1937) described "a case clinically resembling morphoea with a tuberculous background and intermediate histology suggestive of necrobiosis lipoidica". No abnormal lipid was detected histologically. Leifer's (1941) case was in a woman of 35 with flat, firm areas on the legs, with smooth shiny surfaces and telangiectasia. Histological examination showed degenerate areas in the connective tissue with a lymphocytic infiltrate, but no fatty deposit. Leslie (1945) showed a non-diabetic man of 30 with a sharply defined patch on either shin; he made a diagnosis of "morphoea with tuberculoid histology". No fat was found in the zones of abnormal collagen. Forman's case (1949) had originally been seen in 1937, when an infiltrated and discoloured patch on the shin had shown the histology of granuloma annulare. A second biopsy in 1949 again showed histological changes suggestive of granuloma annulare, without fat deposits. Woringer *et al.* (1950) described a patient with an annular lesion on the tibia. Histologically, acellular areas were seen in the dermis, but no fat of abnormal distribution was found even after careful search.

These cases are not surprising if it is true that the deposit of fat in histologically necrobiotic conditions is secondary to the necrobiosis and neither the result of a general disorder of fat metabolism nor the cause of the necrobiosis and inflammatory changes. Degos (1949) has reported a case of diabetic necrobiosis lipoidica in which no fatty change was detectable in the first biopsy although it was found in a subsequent one. In another case he found lipoids in some foci and none in others. If fat may be absent from necrobiosis lipoidica and present in granuloma annulare, this feature alone cannot be held to be distinctive. Moreover, fat deposits are sometimes to be seen in the zones of altered collagen in the skin nodules of rheumatoid arthritis (Fletcher, 1946; Kersley, Gibson and Desmarais, 1946; Raven, Parkes Weber and Price, 1948).

Granulomatosis Disciformis.

In 1948, Miescher and Leder reported two cases for which they suggested the name "granulomatosis disciformis chronica et progressiva". Elsewhere, Miescher (1949) described the lesions of this "completely obscure affection" as peripherally enlarging, yellowish-red and violet red, superficially infiltrated areas, occurring principally on the lower legs, with a clinical similarity to necrobiosis lipoidica diabetorum. Histologically, neither necrobiosis nor lipid deposit was seen. The whole thickness of the cutis showed a granulomatous infiltrate of fibroblasts, epithelioid cells, and giant cells lacking the characteristic arrangement of tuberculosis or sarcoid. The changes were most pronounced around the dermal blood vessels, in the walls of which they appeared to originate. There was no clinical evidence of tuberculosis of other organs or of diabetes.

In 1928 Goldsmith had reported a comparable case of "morphoea with tuberculoid histology". His patient was a middle-aged woman with a patch on the shin which had begun three years previously after an injury. The part was hard and smooth, its upper edge raised and mauvish, the lower part depressed, atrophic and yellowish-brown. An early biopsy showed massive round-cell infiltration in the whole thickness of the skin. The elastica was missing in the infiltrated areas, but the collagen was not strikingly changed. A biopsy from the thickened edge a year later showed masses of small round cells and giant cells. No tubercle bacilli were found histologically and guinea-pig inoculation with biopsy material was negative in result. The patient's tuberculin reaction was moderately positive. In the discussion of this case, MacCormac referred to Stowers' (1921) case and his own (1921) in which a connection with erythema induratum had been suggested. He thought these cases were similar to Goldsmith's: the latter's case was classified by Volk (1931) as a form of erythema induratum and Goldsmith (1936) expressed the view that this and necrobiosis lipoidica might be different phases of the same disease.

An analogous case was demonstrated by Vero in 1934 as a tuberculous granuloma. Tulipan (1934) asked whether this was not in fact necrobiosis lipoidica in a non-diabetic subject. Traub (1934) showed a woman of 30 with comparable lesions on the fronts of the legs. Histologically, a tuberculoid infiltrate was seen in the dermis. Necrosis was absent. Wise (1934) accepted the case as one of necrobiosis lipoidica and referred to a case of Fordyce's in a leper, with the same clinical appearance but with the histology of sarcoid. Traub used the name "morphoea-like tuberculosis cutis" and showed a similar case in 1935 which Sulzberger considered to exhibit the exact clinical picture of necrobiosis lipoidica. Rosen (1944) showed a case with the clinical appearance of necrobiosis lipoidica and the histology of syphilis. The Kahn reaction was negative. No necrobiosis was seen. Wallace (1944a) demonstrated a case

entitled annular cutaneous tuberculosis in a woman of 40 with a strong family history of pulmonary tuberculosis. The lesion on the leg bore a superficial resemblance to morphea, but the histology was of chronic inflammation.

Following Miescher and Leder, several cases have been reported under the diagnosis of *granulomatosis disciformis chronica et progressiva*. Mali (1950) reported two examples. Clinically the lesions suggested a diagnosis of *necrobiosis lipoidica*. Histologically, thickening and thrombosis of the dermal blood vessels were seen, together with dense perivascular mantles of chronic inflammatory cells. Mali regarded tuberculosis as the probable cause; caseating mesenteric glands were found on autopsy in the second case. Wells and Goldsmith described a case under this title in 1951. The clinical appearance suggested *necrobiosis lipoidica* "except for the well defined narrow raised edge" (although Dowling (1946) regarded this as a diagnostic feature of the non-diabetic form of *necrobiosis lipoidica*). No *necrobiosis* was seen histologically; a dense granulomatous reaction was seen in the dermis, arranged around small vessels showing degenerative changes. Goldsmith stated that the existence of a relationship between *granulomatosis disciformis* and *necrobiosis lipoidica* depended on whether the necrosis was primary or secondary. He was inclined to believe that the necrosis was the result rather than the cause of the inflammatory change. Tappeiner (1952) favoured sarcoid as the cause of his two cases. In neither was there clinical evidence of tuberculosis. Arzt (1952) described a case which he regarded as *granulomatosis disciformis*, but he was unable to come to any firm conclusion on the aetiology. Pinetti (1952) reported an extensive case in a man of 43 who also had lesions which were diagnosed clinically as cold abscesses. The skin lesions healed after systemic treatment with calciferol, streptomycin and isonicotinic acid hydrazide; their histology was tuberculoid. Pinetti considered that *granulomatosis disciformis* was probably an atypical form of cutaneous tuberculosis, sufficiently distinctive in morphology to justify the retention of a special name. Sarcoid was again suggested as the origin of a case published by Kogoj and Puriteć (1953). Whether Santler's (1954) two cases are accepted as examples of *granulomatosis disciformis* depends on what degree of abnormality of the connective tissue is considered compatible with the diagnosis. Histologically, areas of swollen acellular collagen were surrounded by a zone of lymphocytes, fibroblasts, epithelioid cells and giant cells and there was evidence of vascular damage.

It therefore seems doubtful whether *granulomatosis disciformis* is an aetiological entity. Lesions of this clinical type have been attributed to tuberculosis, sarcoid, syphilis and leprosy. Haber (1953) found wandering fragments of hair shaft in Wells and Goldsmith's case (1951), which may have been a foreign body granuloma. Finally there is the suggestion, that like *necrobiosis lipoidica* *granulomatosis disciformis* may be due to dermal ischaemia. There is no proof that it is related to *necrobiosis lipoidica* despite clinical and histological

resemblances, and there appears to be no record of a case showing both processes in the same individual.

Summary.

Necrobiosis lipoidica diabetorum was originally described as a complication of diabetes, consisting of hard yellowish plaques in the skin showing atrophy and telangiectasia. Histologically, areas of necrobiosis containing extracellular droplets of fat were found in the corium, together with a chronic inflammatory infiltrate. Subsequently, lesions of varied clinical appearance were diagnosed as necrobiosis lipoidica because their histological features were those of the classical disease. Although obliterative changes in the dermal blood vessels were noted in the original description and were thought to cause the necrobiosis of the dermis, a connection with the disordered fat metabolism in diabetes mellitus was suspected for several years.

In course of time cases were described in patients without discernible abnormalities of fat metabolism and finally in persons without diabetes. It was insisted by some observers that such patients were in a pre-diabetic phase and that they would eventually develop frank diabetes. There are cases on record, however, in which diabetes did not develop even after many years. Other workers felt that diabetes *per se* was not a prerequisite, but that the condition was produced by changes in the dermal blood vessels which might be due to diabetes or to other causes, including abnormal vasomotor control.

Clinical and histological similarities to granuloma annulare invited the hypothesis that the two conditions were related or identical in pathogenesis. Structural vascular changes had been described in a deep form of granuloma annulare. Later, fatty deposits were found in the necrobiotic lesions of the latter. It also became apparent that fatty changes were not invariably present in the histological lesions of necrobiosis lipoidica.

Finally, lesions with clinical appearances resembling those of necrobiosis lipoidica were found in association with purely inflammatory histological changes, lacking both necrobiosis of connective tissue and fatty deposits. It had long been believed by some workers that the lesions of necrobiosis lipoidica were primarily inflammatory rather than degenerative, an association with tuberculosis in particular having been suspected on clinical and histological grounds.

The arguments in favour of the identity of these various conditions are based on analogy and are frequently syllogistic. The aetiology of none of them is known. To unify them it is necessary to assert that none of the cardinal features of the prototypes of necrobiosis lipoidica diabetorum is essential, viz., the classical clinical appearance, diabetes, necrobiosis and lipid change. The only constant feature is chronic inflammation, and vascular damage is found in many cases. On the basis of published clinical and histological

observation it is in my view impossible to say whether the inflammation causes the vascular damage or vice versa. Our information is insufficient to enable us to state with certainty that these skin conditions with clinical or histological similarities are manifestations of the same disease.

PART II: GLYCOGEN AND ALKALINE PHOSPHATASE.

There appears to be a paucity of information on the occurrence of glycogen in dermal lesions. When, therefore, quantities of glycogen were found histologically in cases of necrobiosis lipoidica, it was necessary to make an extended study to place this finding in perspective. The following were submitted to general histological examination and to special study for glycogen:

Necrobiosis lipoidica in diabetics	9 cases
" " in nondiabetics	10 "
Necrobiosis maculosa	3 "
Granulomatosis disciformis	2 "
Granuloma annulare	12 "
Nodules of rheumatoid arthritis	4 "
" of rheumatic fever	3 "
Lupus vulgaris	6 "
Tuberculides, including Bazin's disease	8 "
Sarcoid	1 case
Lepromatous leprosy	1 "
Syphilis	3 cases
Panniculitis with fat necrosis	2 "
Hypostatic ulcers	3 "
Erythrocyanosis	2 "
Raynaud's syndrome with ulceration	1 case
Arteriosclerotic gangrene	3 cases
Scar	1 case
Keloid	1 "
Radiodermatitis	1 "
Histiocytoma	1 "
Scleroderma	3 cases
Xanthoma	1 case
Miscellaneous	9 cases

Selected cases in which suitable material was available were also examined for the presence of alkaline phosphatase activity. Space does not permit the inclusion of clinical details, but in most instances sufficient clinical information and histological material was available for a firm diagnosis to be made. Most of the material had been fixed in 70% alcohol or in formol-saline and was embedded in paraffin. Best's (1906) ammoniacal carmine was used for the detection of glycogen, with saliva-treated controls. Gomori's hexamine-silver technique (1946) was used to demonstrate glycogen for photography (Figs. 1, 2, and 3). A modification of Gomori's (1939) technique was employed for alkaline phosphatase, using alcohol-fixed tissue and the usual controls.

Summary of Results.

Glycogen.—Dermal deposits of glycogen were found in all nine cases of necrobiosis lipoidica diabetorum. It was found free and in histiocytes in the peripheral parts of the necrobiotic areas and in the immediately adjacent corium (Fig. 1). Glycogen was similarly distributed in the lesions of necrobiosis lipoidica in five non-diabetic subjects and in three lesions which clinically and histologically resembled necrobiosis lipoidica, but in which extracellular fat could not be detected ("necrobiosis maculosa"). Glycogen was also found in the lesions of two cases designated granulomatosis disciformis (Fig. 3), which had clinical features suggestive of necrobiosis lipoidica but the histology of chronic dermal inflammation without necrobiosis or necrosis. These were exceptional, as glycogen was not found in other dermal and hypodermal inflammations apart from those showing necrosis or acute inflammatory changes.

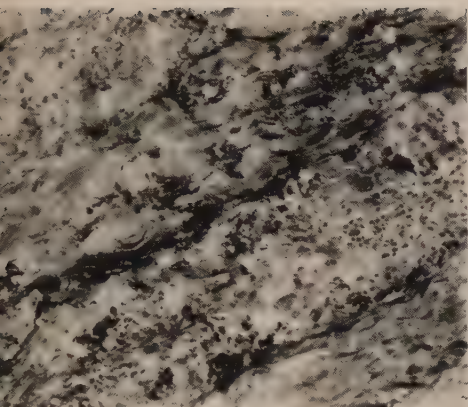
Although glycogen was found in the dermis in 10 of 12 cases of granuloma annulare (Fig. 2), it was generally in smaller quantities than in necrobiosis lipoidica and in several cases only traces were present. In those cases in which no glycogen was found, well marked areas of necrobiosis were present, but, in general, more glycogen was found in lesions with considerable areas of connective tissue change than in those where the latter was scanty or diffuse.

Only traces of glycogen were present in the nodules of rheumatoid arthritis (four cases) and none was found in those of rheumatic fever (three cases). Glycogen was not found in the dermis in lesions due to vascular disease except where a polymorphonuclear leucocytic reaction was present. No glycogen was found in sclerotic lesions of the dermis. None was found in xanthoma and fat necrosis.

Alkaline phosphatase.—Only fifteen cases were examined for alkaline phosphatase activity. In general it was found in sites where it is present in normal skin and in areas of early fibrosis; for example, it was detected in an active keloid, but it was absent in a scar. Correspondingly it was seen in cases of necrobiosis lipoidica diabetorum where fibroblastic repair was histologically evident. It was similarly present in a section of granulomatosis disciformis and cases of Bazin's disease. Activity of the enzyme was also present in areas of cellular infiltration, more in the dense perivascular accumulations of lymphocytes than in the diffuse histiocytes and giant cells.

Alkaline phosphatase activity was also encountered in the centres of areas of necrobiosis in three cases of necrobiosis lipoidica (Fig. 4), but was absent in two others. In granuloma annulare, alkaline phosphatase activity was found in neither the necrobiotic areas nor the abnormal dermis elsewhere.

No regular association between the occurrence of glycogen and alkaline phosphatase activity could be established.



1.—Necrobiosis lipoidica diabetorum. Section to show glycogen. Hexamine silver. $\times 200$.

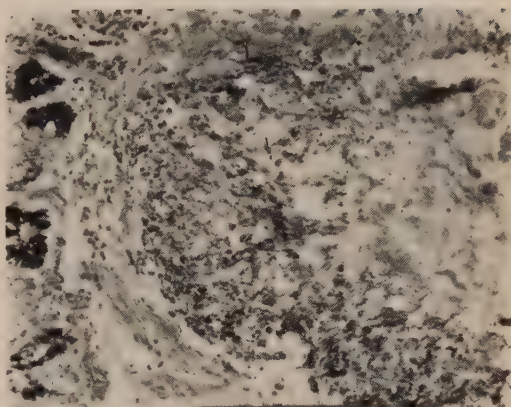
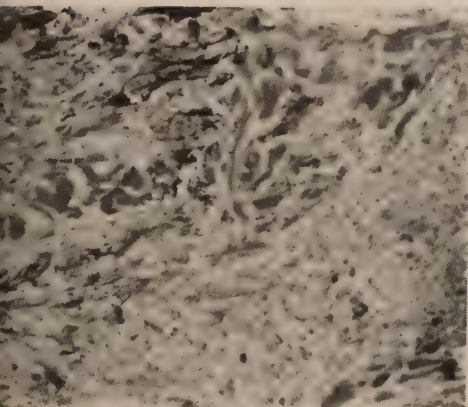


FIG. 2.—Granuloma annulare. Section to show glycogen. Hexamine silver. $\times 200$.



3.—Granulomatosis disciformis. Section to show glycogen. Hexamine silver. $\times 200$.

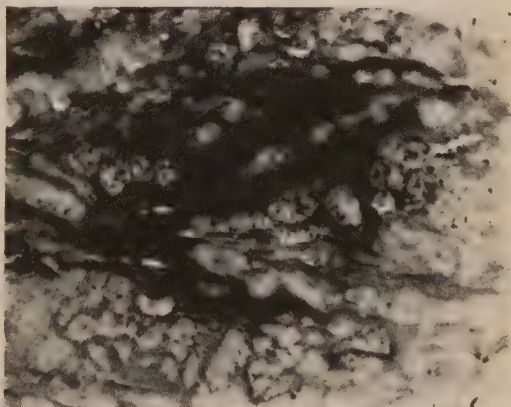


FIG. 4.—Necrobiosis lipoidica diabetorum. Section to show alkaline phosphatase activity in a necrobiotic area. Gomori. $\times 200$.

DISCUSSION

The cause of the glycogen deposits.

The rôle of diabetes.—Every case of necrobiosis lipoidica diabeticorum showed deposits of glycogen in the necrobiotic foci. It also occurred in cases of necrobiosis lipoidica in non-diabetic subjects in situations and amounts similar to those in the diabetic cases. In the latter, no differences in the amounts and distribution of glycogen were detected in severe juvenile diabetics and the mild elderly cases. Diabetes alone cannot be responsible for the deposits of glycogen.

The relationship to fatty change.—It was similarly present in cases resembling necrobiosis lipoidica except for the absence of fat in the necrobiotic foci. Its presence was therefore to some extent independent of fatty change. Glycogen was absent in xanthoma, fat necrosis and a rheumatoid nodule showing fatty change. The presence of glycogen in necrobiosis lipoidica cannot be attributed solely to the abnormal presence of fat.

The significance of vascular changes.—Vascular lesions were not invariably present histologically in the cases of necrobiosis lipoidica, necrobiosis maculosa, granulomatosis disciformis and granuloma annulare, neither was there clinical evidence of structural or functional peripheral vascular abnormality in all of these cases. Glycogen deposits were present to a greater or less degree in most of them. Cases of Bazin's disease, arteriosclerosis, and fat necrosis, showing very marked obliterative changes histologically in the dermal blood vessels, did not contain glycogen except where dermal necrosis or secondary acute inflammatory changes were present. Similarly, cases of functional peripheral vascular disease did not show glycogen in the dermis. It is therefore improbable that glycogen deposits are caused by ischaemia alone.

The relationship to inflammation.—Glycogen was observed in chronic dermal inflammations almost exclusively where tissue degeneration was present. Its presence in necrobiosis cannot be due purely to inflammation. The cases of granulomatosis disciformis were exceptional in showing notable quantities of glycogen without necrosis or necrobiosis.

The relationship to degeneration.—If the observations in these cases of granulomatosis disciformis are valid, the presence of glycogen in necrobiosis lipoidica and granuloma annulare cannot be due invariably to degeneration of connective tissue. Glycogen was absent from cases of granuloma annulare showing easily detectable necrobiosis. There were only traces of glycogen in the nodules of rheumatoid arthritis and none in those of acute rheumatism. It might be objected that the degenerative process in the rheumatic group differs from that in granuloma annulare and necrobiosis lipoidica. In one of the rheumatoid lesions, however, marked fatty deposits were observed and the general histological picture mimicked that of necrobiosis lipoidica.

The relationship to fibrosis.—Finally, the glycogen in necrobiosis lipoidica cannot be attributed to fibrosis. It was not found in the areas of fibroblastic activity or of old fibrosis. Keloid, scar tissue and other sclerosing lesions did not contain glycogen.

The Significance of the Glycogen Deposits.

Most of the published work on the physiological and pathological deposition of glycogen in the skin is devoted to the epidermis and is not directly relevant. Some information can be obtained from the writings of Bossellini (1920), Lubarsch (1906), Lombardo (1907), von Gierke (1907), Best (1907), Sasakawa (1921), Montagna *et al.* (1951) and Bangle (1952). None of these authors appears to describe such striking deposits of glycogen as were observed in the cases of necrobiosis lipoidica. It seems probable that, in general, the glycogen which occurs in diseased tissues is produced locally, and this may be due *either* to inflammation or to ischaemia. Fatty change, on the other hand, is now held to be due to infiltration of fat from outside the diseased focus (Dible, 1932). Glycogen and fat may coexist in the same site, but if it is true that the mechanisms by which they are deposited are different, it can be seen why they do not necessarily always occur together.

Applying the recorded opinions to the problem of necrobiosis lipoidica it seems possible to attribute the occurrence of glycogen in this condition either to vascular impairment leading to anoxia or starvation of the corium, or to inflammation causing degeneration. (The latter may be due to the local metabolic requirements exceeding the available supply.)

The same explanations are applicable to the existence of fat in the lesions of necrobiosis lipoidica. The coexistence of fat and glycogen is consistent with their both being secondary to the initial inflammatory or degenerative process, suggesting that necrobiosis lipoidica is not a local lipoidosis causing the inflammation and necrobiosis. Necrobiosis maculosa may be the same disorder as necrobiosis lipoidica in the stage before fatty change.

The infiltrate in necrobiosis lipoidica is not of the type which from recorded experience would be expected to give rise to notable quantities of glycogen without the supervision of degeneration. The same applies to the cases of granulomatosis disciformis in which no degeneration was visible. Either the deposit of the glycogen is due to some unsuspected cause or in the cases of granulomatosis disciformis the degeneration is of a type or degree undetectable by the techniques employed. It has already been seen that in granuloma annulare, glycogen and degeneration were irregularly associated.

Vascular changes alone do not appear to cause the deposits of glycogen. It might be suggested that a combination of ischaemic and inflammatory factors is required, but against this explanation is the absence of glycogen in the cases

of Bazin's disease and fat necrosis, in which both marked obliterative vascular changes and dermal inflammation were observed.

The significance of the glycogen deposits cannot therefore be stated with certainty.

The Significance of Alkaline Phosphatase.

The alkaline phosphatase studies were undertaken because of the association of this enzyme with glycogen in other tissues. Wislocki and Dempsey (1945) have suggested that alkaline phosphatase might be involved in the dephosphorylation of glucose-phosphate, prior to the polymerisation of glucose to glycogen. (Pritchard (1947) found this hypothesis untenable on thermodynamic grounds.) Wislocki and Dempsey considered that glycogen occurred in poorly vascularized sites which are presumably characterized by low respiratory activity; they thought that anaerobic glycolysis might provide some energy for oxidation in tissues with limited resources for aerobic respiration. It was therefore hoped that alkaline phosphatase activity might be found in the lesions of necrobiosis lipoidica in such situations as to indicate respiratory embarrassment in the dermis.

This hope was not realized. Alkaline phosphatase activity was found in the physiological sites described by Gomori (1941), Kabat and Furth (1941), Bourne (1943), Fell and Danielli (1943), Fisher and Glick (1947), and Pirilä and Eränkö (1950). The enzyme was also detected in cellular infiltrates and areas of active fibroblastic repair as seen by previous investigators. In addition, alkaline phosphatase activity was seen in the centres of areas of necrobiosis in some cases of necrobiosis lipoidica. These areas were devoid of cells so that the enzyme could not have been produced locally. It seems possible that the enzyme is absorbed by the necrobiotic tissue. Similar diffuse alkaline phosphatase activity is seen in the scabs of healing wounds (Fell and Danielli, 1945) where it is derived from the polymorphonuclear leucocytes. The distribution of the enzyme in the lesions of necrobiosis lipoidica did not suggest that it had any significance peculiar to this disease.

The Pathogenesis of Necrobiosis Lipoidica.

The central problem in the pathogenesis of necrobiosis lipoidica is whether it is primarily an inflammation, leaving necrobiosis in its wake, or degenerative, exciting an inflammatory response around the areas of necrobiosis. Histologically, the cellular elements are largely perivascular and the necrobiotic areas, although occasionally centred on degenerate vessels, often appear to be intervascular. If the necrobiosis were due to inflammation or a toxin spreading from the vessels, it would be anticipated that it would more regularly occur around the latter. Elastic tissue is often fairly well preserved in the necrobiotic

areas and absent in the areas of dense cellular infiltration or fibroblastic repair. This also suggests that the necrobiosis cannot be the result of an inflammation of the intensity seen elsewhere in these lesions.

If the necrobiosis were due to anoxia or starvation of the dermis, it would be expected to occur in the intervacular spaces. There are no capillaries devoted to the corium (Spalteholz, 1893). The vessels connecting the deep and subpapillary plexuses proceed through the dermis with little arborization, giving off capillaries to special structures, such as sweat glands or pilosebaceous follicles. The dermis is presumably served by the main vessels traversing it, either by arteries with negligible muscular walls or by the returning veins. The absence of true dermal infarcts is due to the richness of the anastomoses in the plexuses. The distribution of the areas of necrobiosis in necrobiosis lipoidica coincides with those which would be most affected by anoxia or deprivation of other metabolites. However, as already stated, there is no evidence that structural or functional disturbances of the dermal blood vessels is invariably present in these cases, and in others where such disturbance is manifest, necrobiosis does not occur. The anoxia, etc., cannot be of more central origin or the disease would not be so localized.

The same explanation does not necessarily apply to granuloma annulare, in which degenerative changes may be scanty or absent. It seems more probable that in granuloma annulare the primary process is inflammatory. The cellular reaction more characteristically envelops the necrobiotic areas in which traces of degenerate infiltrate can be seen. Admittedly the elastica may be relatively well preserved, but the degeneration of connective tissue in granuloma annulare is rarely as severe as in necrobiosis lipoidica, and scarring is unusual.

The distribution of glycogen in necrobiosis lipoidica and granuloma annulare is consistent with either the inflammatory or the degenerative hypothesis and does not aid in solving this particular problem.

CONCLUSION.

Glycogen occurs regularly in the lesions of necrobiosis lipoidica diabetorum. This finding does not appear to have been reported before.

Glycogen is equally and similarly distributed in necrobiosis lipoidica diabetorum, necrobiosis lipoidica in non-diabetics and in "necrobiosis maculosa".

It is suggested that these three diseases are closely similar if not identical in pathogenesis.

Necrobiosis lipoidica cannot be a local lipoidosis exciting degenerative and inflammatory changes in the corium.

The discovery of glycogen in the lesions of necrobiosis lipoidica does not help to decide whether the disease is primarily inflammatory or degenerative.

It seems probable that the pathogenesis of granuloma annulare is different

from that of the necrobiosis lipoidica group but it may be closer to the latter than to rheumatic diseases.

There are only slight indications that granulomatosis disciformis may be related to the necrobiosis lipoidica group of diseases. Alkaline phosphatase activity may be detected in the centre of some areas of necrobiosis in necrobiosis lipoidica but not in granuloma annulare. It may be a diffusion artefact. This also appears to be an original finding.

ACKNOWLEDGEMENTS.

This paper is based on a thesis submitted for the London M.D. in October, 1954.

The work was carried out at University College Hospital Medical School and was aided by a grant from Rockefeller Foundation funds held by the School.

Extensive use was made of the large histological collection in the Department of Dermatology at University College Hospital Medical School, assembled by the late Dr. W. Freudenthal.

Histological material and clinical details were obtained from Drs. F. Ray Bettley, L. Forman, Pat Fox, W. N. Goldsmith, G. B. Mitchell-Heggs, Colin Jones, C. Leslie, W. B. de L. Lusk, Bentley Phillips, A. D. Porter, I. Martin-Scott and J. E. M. Wigley.

Patient and resourceful technical assistance was rendered by Mrs. J. Hardy.

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THE REACTION TO FRICTION OF PATIENTS WITH FLEXURAL ECZEMA.

P. F. D. NAYLOR, M.A., M.D.

Research Fellow, The Institute of Dermatology,
British Postgraduate Medical Federation, University of London.

PART I: THE ACUTE FRICTIONAL REACTION.

DERMATOLOGISTS are familiar with a distinct group of patients with a skin disorder variously known as Besnier's prurigo, atopic eczema or chronic flexural eczema.

Patients with this complaint frequently say that, during an exacerbation of their disease, the most gentle scratching will produce a break in the epidermis. It was therefore decided to measure the amount of friction needed to produce blisters in these patients.

Method.

Eight male patients with chronic flexural eczema who were of the same age group as the 30 normal subjects previously studied (Naylor, 1955) were subjected to blistering experiments using the technique described at that time. Again, the site was the skin over the middle third of the anterior surface of the tibia. In all but one of these patients the skin in that site was clinically normal; one patient (N. C—) showed a minor degree of lichenification of the skin in that area. Two blisters were produced on each patient, one on each leg. The polythene friction head was used at a vertical load of 530 g. and a speed of 1 cycle in 3 seconds.

Results.

The results of these blistering experiments expressed in terms of the two variables, frictional force and number of rubs required to produce a blister, are shown in Table I. The results from the two sides have been averaged for each patient and are presented by superimposing these points upon the comparable data from the thirty normal subjects. This is shown in Fig. 1. It can be seen that three of these eight patients (R. H —, D. H — and J. W. P—) showed a tolerance to friction which was outside the range of normality. That this difference is statistically significant can be seen from Table II. The predicted value for the number of rubs required to produce a blister was calculated from the regression equation derived from the results of the 30 normal subjects (Naylor, 1955).

TABLE I.—*Atopic Eczema Patients: Skin Unprepared.*

Results of blistering experiments showing the recorded frictional force and number of rubs to blister formation. Constant vertical load of 530 g.

Code.—R = right; L = left; S = superior; M = middle; I = inferior; WB = wet bulb temperature ($^{\circ}\text{C}$); DB = dry bulb temperature ($^{\circ}\text{C}$); F = frictional force (g.); N = number of rubs to blister formation.

(1) D. H.	.	.	.	.	.	.	WB = 13.7. DB = 21.5. RI: F = 253. N = 170. RS: F = 231. N = 98.
(2) R. H.	.	.	.	.	.	.	WB = 10.2. DB = 17. LM: F = 301. N = 103. RM: F = 220. N = 295.
(3) F. B.	.	.	.	.	.	.	WB = 13.5. DB = 22.3. LM: F = 315. N = 23. RM: F = 244. N = 30.
(4) J. W. P.	.	.	.	.	.	.	WB = 13.7. DB = 19.7. LM: F = 255. N = 198. RM: F = 255. N = 143.
(5) R. C.	.	.	.	.	.	.	WB = 13. DB = 20. LM: F = 302. N = 27. RM: F = 277. N = 43.
(6) E. R.	.	.	.	.	.	.	WB = 14.5. DB = 22.5. LM: F = 258. N = 36. RM: F = 255. N = 47.
(7) M. A. R.	.	.	.	.	.	.	WB = 13.5. DB = 19.5. LM: F = 273. N = 58. RM: F = 257. N = 39.
(8) N. C.	.	.	.	.	.	.	WB = 17. DB = 22.5. LM: F = 236. N = 85. LI: F = 254. N = 62.

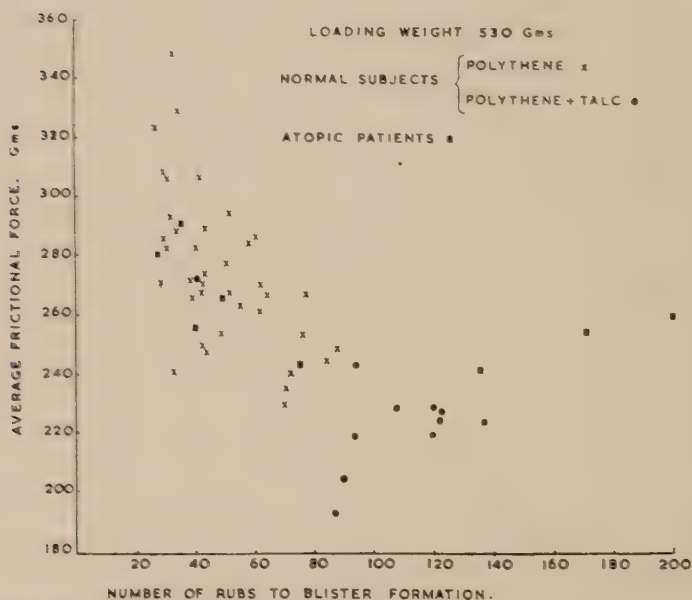


FIG. 1.—A comparison between normal subjects and atopic eczema patients in their susceptibility to experimental blister formation.

TABLE II.

Data from blistering experiments on the atopic eczema patients who showed an increased tolerance to friction.

F = frictional force (g.); N = number of rubs to blister formation. Regression equation: $N = 163 - 0.26 \left[1000 \log \frac{F}{100} \right]$. 95% limits are ± 30.8 around regression line.

Frictional force . . .	1000 Log $\frac{F}{100}$	Predicted N.	Actual N.
Patient (R.H—):			
L: F = 301 . . .	478.6	39	103
R: F = 220 . . .	342.4	74	295
Patient (D.H—):			
R: F = 231 . . .	363.6	68	98
R: F = 253 . . .	403.1	58	170
Patient (J. W. P—):			
L: F = 255 . . .	406.5	57	198
R: F = 255 . . .	406.5	57	143

The patient (N. C—) whose skin showed a minor degree of lichenification behaved as a normal subject, as did the remaining four.

DISCUSSION.

It appears from the results of these experiments that the skin over the anterior surface of the tibia in a proportion of patients with atopic eczema, although clinically normal, is much more resistant to blister formation than that of normal people.

The reason for this increase in resistance to skin friction is not understood.

The factors which may be involved are discussed below. The "applied friction stimulus" is defined as the number of rubs applied to the skin at a constant known load.

Friction applied to the skin surface causes a necrosis of the prickle cells at a distance below the surface. The outward indication that this process has reached a critical stage is a sudden breakdown of the epidermis. The prickle cells are everywhere surrounded by other layers of cells, which may either modify the applied friction stimulus, or may modify the susceptibility of the prickle cells to the stimulus, or may mask the fact that necrosis of the prickle cells has occurred.

The stratum corneum may modify the applied friction stimulus by alterations in the coefficient of friction between itself and polythene caused by grease and moisture. This factor is measured by taking a continuous recording of the frictional force.

The thickness of the stratum corneum may attenuate the effect of the frictional force on the prickle cells. Differences in the amount of flaking of the stratum corneum would vary this attenuation and further complicate this factor. It has therefore proved impossible to measure the friction stimulus reaching the prickle cells, i.e. the "true" stimulus.

Finally, the stratum corneum may be of sufficient thickness or strength to prevent or delay breakdown of the epidermis and thereby mask the necrosis of the prickle cells when this has occurred.

A minor degree of lichenification does not apparently influence the results, as the patient (N. C—), who showed such a change, behaved as a normal subject. It is therefore improbable that the increased resistance to friction shown by these patients is due to a minor degree of lichenification which was not detectable clinically.

It is possible that dermal factors may modify the susceptibility of the prickle cells to the true friction stimulus but so far no such factors have been incriminated (Naylor, 1955). In normal subjects, it was not possible to demonstrate any difference in susceptibility to friction at extreme differences in blood flow of short duration. Prolonged changes in dermal blood flow may have an effect, but this has not been investigated. It was also impossible to demonstrate any difference in susceptibility to friction between normal subjects and patients with a greatly exaggerated triple response. Thickness of subcutaneous tissue and skin elasticity were not measured, but did not appear clinically to differ in the atopic patients from the normal subjects.

The clinical histories of these patients revealed that the three who showed the increased tolerance to friction were the only patients who had never had asthmatic symptoms. The significance of this is obscure.

The factors most likely to be involved in this increased resistance to friction would seem to be either that the prickle cells themselves are more resistant to friction or that there is a change in property of the stratum corneum.

PART II: THE CHRONIC FRICTIONAL REACTION.

Lichenification or lichenization is regarded by many observers as being a reaction of the epidermis to scratching. Sequeira, Ingram and Brain (1947) write: "Prolonged scratching causes pigmentation and thickening of the integument and sometimes lichenization." Roxburgh (1950) writes "Lichenification is a condition of the skin produced by rubbing it over a long period." It occurs most commonly in areas of skin affected by a chronic dermatitis and which are therefore subjected to repeated scratching. It can also occur in sites which although not affected by dermatitis, are scratched repeatedly by patients because, it is asserted, there is a psychological abnormality.

The frequent presence of lichenification in patients with chronic flexural eczema led to the decision to try to produce this change experimentally. It was thought that increased tolerance to friction might make the experiment technically easier and a patient was therefore chosen who showed such behaviour.

Experiment 1.

Method.—One of the patients who showed an increased tolerance to friction (D. H—) was a fellow doctor, and he agreed to have his skin rubbed daily. Over a period of three months he received daily rubbings for five days a week over the same site on the anterior surface of the tibia. As he blistered with such extreme difficulty it was possible to administer a much larger number of rubs without blister formation than would have been possible to a normal person.

The speed of rubbing was 1 cycle in 3 seconds and the loading weight of the polythene friction head 530 g. The dosage of friction given was 75 cycles

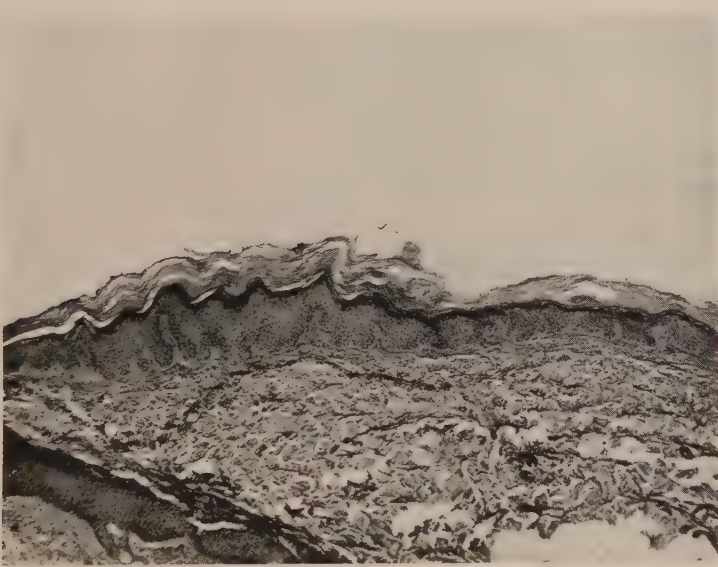


FIG. 2.—Photomicrograph of a section of skin of an atopic eczema patient. The biopsy was made after 14 weeks' daily rubbing. H. & E. $\times 140$.

per day for one week ; 100 per day for 6 weeks ; 150 per day for 5 weeks and 175 per day for 2 weeks. The frictional force was not measured as this would have involved sticking the frame to the site with collision daily and also its removal daily. It was considered that this might produce a reaction in the skin and the frame was therefore held in position manually. The position for the frame on the patient's leg was marked by four small tattooed spots.

Photographs were taken initially and after 14 weeks. A biopsy was performed at the conclusion of the experiment.

Results.—After 14 weeks' rubbing an area of epidermal thickening could be seen, limited to the area which was rubbed by the polythene friction head. The histological appearance of this area is shown in a photomicrograph (Fig. 2).

The right side of the section shows normal skin and the left shows the typical changes of lichenification with an increased thickness of the prickle cell layer and of the horny layer. The transition between the two areas is abrupt. At no time was there any irritation of the skin in which the experimental lichenification was being produced.

Experiment 2.

Method.—An attempt was made to produce similar changes in the same site on a normal subject, also a fellow doctor, aged 26. The rubbing was again performed with the polythene friction head at a speed of 1 cycle in 3 seconds and the loading weight was 530 g. The number of rubs given per day was limited to 30 as it was felt that this was the maximum number which could safely be given without producing a blister.

Results.—There was no change clinically in the skin after 14 weeks. A biopsy was not performed.

DISCUSSION.

Experimental evidence relating to the rôle of mechanical stimulation in the production of lichenification is inconclusive and it is still disputed whether an entirely normal skin can lichenify as a result of scratching or whether there has to be some underlying abnormality of the skin which produces the irritation and possibly predisposes the skin to react in this particular way.

Ruben (1949) conducted experiments in which each subject rubbed for ten minutes daily for 30 days an area of skin on one thigh to which aquaphor had been applied. Biopsies from the area rubbed and the corresponding area on the other thigh showed that this procedure had induced hyperkeratosis but no thickening of the non-cornified part of the epidermis. In his control groups, however, rubbing of the skin without the application of aquaphor or the application of aquaphor without rubbing did not cause thickening of either the horny layer or the non-cornified part of the epidermis.

Goldblum and Piper (1954) succeeded in producing lichenification with a scratching machine in patients with neurodermatitis, eczema and pityriasis rubra pilaris.

It appears from the results of the experiments described in Part I of this paper that in a proportion of patients with atopic eczema the skin over the anterior surface of the tibia, although clinically normal, is much more resistant to blister formation than that of normal people. As a result of this observation it was possible to administer daily to such a patient, without producing a blister, two to six times the number of rubs which would produce a blister in a normal subject. This was followed by lichenification of the area of skin which was rubbed. No comparable change was produced experimentally in a normal subject, but the total amount of friction administered was necessarily smaller.

These observations suggest that lichenification is more easily produced under the experimental conditions described when the skin is resistant to blister formation. It is not implied that the production of lichenification depends upon a high degree of resistance to blister formation, for the patients with atopic eczema whose resistance to blister formation appeared to be within normal limits all showed lichenification of some areas of the skin as part of their disease.

SUMMARY.

Eight patients with atopic eczema have been studied. All experiments have been performed on skin overlying the middle third of the anterior surface of the tibia using polythene as the rubbing agent.

Three of these patients, although the skin over the anterior surface of the tibia appeared clinically normal, appeared to be abnormally resistant to friction in that they did not produce blisters until they had received several times the amount of friction necessary to produce blisters in a group of normal subjects. Possible mechanisms of this are discussed.

Owing to this abnormal resistance to friction it was possible to administer daily to the same site on such a patient, without producing a blister, several times the number of rubs needed to produce a blister in a normal person. The skin reacted to this by producing a patch of lichenification. No comparable change could be produced in a normal person.

The material for this paper formed part of a Thesis for the degree of M.D. at the University of Cambridge.

The histological work was done by Dr. I. Whimster of the Department of Pathology, St. Thomas's Hospital Medical School.

I would like to thank Professor E. P. Sharpey-Schafer for the facilities and help of the Department of Medicine, St. Thomas's Hospital Medical School, and Dr. G. B. Dowling, Dr. G. C. Wells and Dr. C. D. Calnan for referring patients to be investigated.

I would also like to thank the following people for help in the preparation of this paper: Miss Joan Dewe for the preparation of Fig 1, Mr. Morman and his colleagues for the photographic reproduction of the figure, Mr. Clark for the photomicrograph and Miss Leicester for the typescript.

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FAVUS OF THE SCALP. OBSERVATIONS ON THE MANNER OF SPREAD.

R. WORKMAN CARSLAW, M.D., F.R.F.P.S.G.

Assistant Physician, Skin Department, Victoria Infirmary, Glasgow.

FAVUS, first recognized as a clinical entity during the middle ages, was in 1838 shown by Schoenlein to be due to a vegetable parasite. Eastern Europe, Central Europe, the Mediterranean littoral and the Near East have been considered as the main reservoirs of infection, but in the early years of this century Scotland had the unenviable reputation of being a country where the infection was frequently seen. The number of cases recorded in Scotland has greatly diminished with the advance of the century, as two ten-year periods at Edinburgh Royal Infirmary show ; 141 cases were reported from 1914 to 1923, while, in the period 1930 to 1939, 7 cases were recorded by Walker and Percival (1939). Kinnear (1948) considers favus to be rare in the Eastern Region of Scotland, and reported two cases out of a total of 631 cases of *tinea capitis*. Whittle (1947) commented that favus besides becoming progressively rarer in the British Isles had somewhat changed its form so as to be less readily recognized, and he suggested that we must be prepared for it to masquerade as psoriasis, dandruff, impetigo and occasionally folliculitis decalvans.

I saw my first case of favus of the scalp outside the demonstration room in 1948 and, as this case was quickly followed by a family containing many infected members, my interest was aroused. I have seen now, over a period of six years, thirty-nine cases of favus of the scalp in the South-West Region of Scotland and, as a consideration of the family grouping and age of incidence throws some light on the manner of spread of the infection, I wish to record the case histories.

MATERIAL.

From January 1948 to January 1954, thirty-nine cases of favus of the scalp were seen at the out-patients departments of several hospitals in the South-West Region of Scotland. Thirty-five presented the typical picture with scutulae and many also showed alopecia and cicatrices. Two cases presented as a *tinea amiantacea* and in two the infection was burnt out, no viable fungus being found. The typical green fluorescence was present in all under filtered ultra-violet rays and culture gave *Trichophyton schoenleini*. Several of the cases had already been correctly diagnosed and were sent for treatment ; others had been treated as impetigo and the two resembling *tinea amiantacea* as seborrhoea capitis. The thirty-nine cases came from thirteen different

families and two further cases were reliably reported to exist although not seen by me, making a total of forty-one cases in the thirteen families. All patients over the age of three years, with the exception of five where treatment was refused, were treated by x-ray epilation using the Kienbock-Adamson technique.

So that the pattern of the distribution of the cases can be presented a short description of the affected families is now given.

Family 1.—This family live in a country town and are of farming stock. At the time of coming under my observation in 1948 there were the parents and seven children. All had favus of the scalp with the exception of the father. The eldest child was epilated in March, 1948, and the mother and other children from October 1948. An eighth child born in 1949 became infected. At the time of the birth of this child the mother's infection had relapsed and she was later epilated again. A ninth child born in 1951 escaped infection. The mother was free from infection at the time of this birth.

Family 2.—This family live in the same town as Family 1 and are also of farming stock. At the time of coming under my observation in 1948 the mother presented evidence of past infection, but it was burnt out and no viable fungus could be detected. Eight children had favus of the scalp. The father showed no evidence of past or present infection and a son aged fourteen years was also free from infection. A tenth child born in June 1949 and an eleventh born in April 1951 escaped infection.

Family 3.—This family live in the same town as Families 1 and 2. The family is not of farming stock and is in the upper middle class. At the time of coming under observation in 1952 the mother showed no evidence of past or present infection. The eldest child, a son, was affected but the only other child, a girl, was free. The father, deceased, had not shown any evidence of infection.

Family 4.—This family live in an industrial town and are not of farming stock. At the time of coming under my observation in 1948, the mother and the only child, a girl of one year and ten months, had active favus of the scalp. A second child, born before treatment of the mother, became infected at the age of six weeks. The mother was then epilated but relapsed and her third child, a boy, was found to be infected when first seen at the age of six months. The father was free from infection.

Family 5.—This family live in the same industrial town as Family 4 and are not of farming stock. At the time of coming under observation in 1948 the mother showed no evidence of past or present infection. The father was free from infection. Out of a family of five children the two eldest were found to have favus of the scalp. The mother in this family is a sister of the mother in Family 4. The grandmother and an uncle had been infected, but neither were available for examination.

Family 6.—This family live in the same industrial town as Families 4 and 5 and are not of farming stock. When first coming under observation in 1953 the mother had active infection, but the father was clear. Of their three children the eldest, a girl aged six years, had favus of the scalp; the second, a boy aged three years, was clear and the youngest, a boy aged five months, was infected. The girl has responded to x-ray epilation and the infant responded to local fungicidal applications. The mother refused treatment and remains infected.

Family 7.—This family live in the same industrial town as families 4, 5 and 6 and are not of farming stock. At the time of coming under observation in 1950 the mother showed evidence of past infection but no evidence of viable fungus. The father was free from infection. Of the five children two only were infected, a girl of twenty-two years and a girl of five years. Three boys aged twenty-four, fifteen and eleven had escaped infection.

Family 8.—This family live in the same industrial town as Families 4, 5, 6 and 7 and are not of farming stock. At the time of coming under observation in 1948 neither parent showed evidence of infection. One boy had favus of the scalp. Other children in the family were said to be free from infection, but were not examined.

Family 9.—This family live in an industrial town and are not of farming stock. It was not possible to examine all members of this family. When they came under my observation in 1951, the father was seen and found to be free from evidence of past or present infection. Two boys, aged thirteen and four years, were found to have favus of the scalp. The mother said that she was affected, as was also her youngest child aged under one year. Four children aged twenty, nineteen, sixteen and seven years were said to be free from infection. This family were reluctant to attend for treatment and only the boy aged thirteen was epilated.

Family 10.—This family live in the same industrial town as Family 9 and are not of farming stock. At the time of coming under observation in 1949 the mother and the eldest child, a boy, had favus of the scalp. The father was free from infection. The three other children in the family were not seen, but were said to be free from infection.

Family 11.—A boy living in a country town came under observation with favus infection of the scalp in 1948. All trace was lost of the family and no other members were seen.

Family 12.—A boy from the same country town as Family 11 came under observation with favus of the scalp in 1949. He was an adopted child and no knowledge of other members of his family could be obtained.

Family 13.—This patient, a girl aged eighteen years from a country town, was an orphan and did not attend after the initial examination in 1951. She has not since been traced.

TREATMENT.

Treatment was by x-ray epilation using the Kienbock-Adamson technique. In view of the known difficulty in curing favus of the scalp, a fungicidal application was used both before and after epilation. Various applications were used for trial periods, and the one most commonly applied was an ointment consisting of salicylic acid 20 grains, precipitated sulphur 30 grains, ammoniated mercury 30 grains, yellow petroleum jelly to one ounce. In Family 6 Unguentum Decilderm* was used. Many of the cases relapsed after epilation and in some cases this was repeated on more than one occasion.

Result of Treatment.

Cleared with one epilation	.	.	.	19
„ „ two epilations	.	.	.	8
„ „ three epilations	.	.	.	1
„ „ four epilations	.	.	.	1
Failed after two epilations	.	.	.	1
Not yet epilated	.	.	.	1
Epilation refused	.	.	.	5
Infection burnt out	.	.	.	2
Cleared with local treatment only	.	.	.	1

* A proprietary ointment made by Messrs. Duncan, Flockhart & Co. Ltd., and containing 5% undecylenic acid and 20% zinc undecylenate in an ointment base.

The single case cleared with local treatment was a baby aged five months. The fungicidal application used was Unguentum Decilderm.

Re-growth of hair after epilation was satisfactory in all cases including the case requiring four epilations. Where scarring was present at the time of epilation some permanent alopecia resulted, conforming to the scarred areas.

DISCUSSION.

I propose to exclude Families 11, 12 and 13, where details of members of the family are lacking, from the following discussion of the cases. Consideration of the remaining ten families reveals that susceptibility to infection is in early infancy, and that infection is, in the majority, from the mother. In all these families the father escaped infection, whereas the mother was, or had been, infected and showed the sequelae in seven out of the ten. There was, however, no such sex discrimination among the children infected, fourteen being female and seventeen male. In all the families the parents were living together.

Where several children in a family were affected the signs of the disease at the time of observation suggested that the duration of the infection in each child was related to the age of the child. Cicatricial alopecia was more marked in the older than in the younger children. In Families 1 and 2, where seven and eight children respectively were found to be infected when the families first came under observation, the degree of cicatricial alopecia was progressively more marked from the youngest to the oldest member. According to Sabouraud (1910) and Ormsby and Montgomery (1948) scarring is in some degree a measure of the duration of infection. It appears possible that in these two families the children all contracted the infection at about the same age and that that was before the second year of life. In each family when first seen the youngest child was already infected and was in its second year of life.

This conclusion appears to be confirmed by the progress of the infection in Family 4. In this family the mother and only child were affected when first seen. The child was epilated, but as the mother was pregnant epilation was withheld in her case. Six weeks after the birth of her second child she was still infected and the child was already infected. The mother's scalp was then epilated. She was seen again during her next pregnancy and then had a relapse of the favus infection. The third child at the age of six months was found to have favus of the scalp and the mother still showed evidence of active infection.

No child once cured of favus infection became re-infected even although exposed to infection from other members of the family. This was well illustrated in Families 4 and 6 where although the mother continued to show active infection the children were cured and did not become re-infected. No child who had escaped infection in infancy developed the infection later, although living in a family where other members, in some cases including

the mother, had active infection. Families 2, 3, 5, 6, 7, 9 and 10 illustrate this observation.

Six babies were born to the families during the period of observation. Three of these infants became infected in their first year of life (one in Family 1 and two in Family 4). The respective mothers had active favus of the scalp at the time of the birth. Three infants escaped infection (one in Family 1 and two in Family 2). The respective mothers were free from active infection at the time of the birth.

Sabouraud considered that infection was possible at all ages but that in practice it was rarely seen apart from school age. It was rare in nursing infants although sometimes contracted from an infected mother. He quotes Ciarrocchi reporting 5374 cases with the extremes of age of two and eighteen years. My findings indicate that with the present state of favus in Scotland susceptibility to infection is in early infancy and that very close and prolonged contact is required, such as that between the newly born infant and the mother. Should the mother be free from infection when the child is born, the child will escape infection. Should the child escape infection in early infancy, the risk of developing favus is then very slight and in the male adult, at least, non-existent.

SUMMARY.

Thirty-nine cases of favus of the scalp distributed among thirteen families were seen between January 1948 and January 1954.

A consideration of these cases indicates that the infection is passed from the mother to the new-born child and not from child to child.

When a child escapes infection in infancy the risk of acquiring infection in later life is slight.

In no case was the father of an infected family himself infected.

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THE MANAGEMENT OF *TINEA CAPITIS*. REPORT ON 1877 TREATED CASES.

CHAIM BERLIN, M.D. AND CLARA MEYROVITZ, M.D.

From the Department of Dermatology, Municipal Hospital Hadassah,
Tel-Aviv, Israel.

RINGWORM of the scalp is prevalent in this country, sometimes assuming an epidemic-like character. The permanent immigration from countries of the Near and Middle East, where the disease is epidemic, makes the campaign against it very difficult. Despite the fact that the fungi may originate from various sources, the clinical and microscopical aspects of *tinea capitis* are uniform here, trichophyton infection being the predominant variety. Sagher (1947), in a culture study of the various mycoses in Jerusalem, found that *T. violaceum* was responsible for 85.2% of all cases of *tinea capitis*. It is characterized by asymptomatic non-inflammatory variously-sized and shaped, mostly ill-defined scaly patches, where the hairs are sparse, absent or broken off close above the surface of the scalp, leaving very short stumps and appearing often as comedo-like black dots. Single or grouped stumps or black dots are often seen scattered irregularly over the scalp among the healthy hair. The greyish dry scales removed with some force with a cilia forceps furnish the best material for microscopic examination. They generally contain fragments of diseased hair, well visible with the naked eye or with a magnifying glass. In 20% potassium hydroxide preparations spores are found under the microscope closely packed within the hair shaft (endothrix) and arranged in chains.

Microsporiasis with ectothrix is seen here only occasionally. Favus is encountered, especially among the Arabs and the *émigrés* from Persia. It tends to leave patches of scars and permanent alopecia.

Kerion Celsi is sporadically encountered without connection with familial ringworm. In several instances the contraction of the infection from animals was proved. The clinical features are a single or several furuncles, carbuncles or abscess-like infiltrates of the size of a plum or larger. The hairs are loose and readily extractable. In contrast to the non-inflammatory ringworms fungus is not easily demonstrable and many hairs may have to be examined before septate filaments and spores in groups and chains can be found irregularly dispersed within or without the hair.

In seventeen years—1937 to 1954—more than 2000 patients with *tinea capitis* applied for treatment in our out-patient clinic, but only 1877 were adequately followed and are included in the present survey—1784 cases of

trichophytosis (including isolated cases of microsporosis), 75 of favus and 18 of kerion Celsi.

The vast majority of the patients were school children. Specially trained nurses periodically examined the heads of the children, and suspected cases were sent to our clinic. Here the diagnosis was made clinically and microscopically. Wood's light was not used for examination since ringworm due to trichophyton infection fails to reveal fluorescence. There was no difference in incidence between summer and winter: sweat, which favours the development and spread of mycosis of glabrous skin, has apparently no influence on ringworm of the scalp.

Infected children were excluded from school to protect the other children and to induce the parents to co-operate. No specific treatment was started before the home conditions were thoroughly investigated. The examination of all the members of the family including the parents is time-consuming and requires the help of public health nurses and city health authorities, but it is imperative in order to track down all possible known and hidden contacts. The following figures show the spread of the disease within families. Among our patients 25 were only children, 70 were the only afflicted children in families with many siblings. The remaining cases were brothers and sisters of large families. The involvement of 3 or 4 children in one family was a rather frequent occurrence. In 2 instances 8 members of a family were infected, including the mothers.

The youngest patient was 7 months and the oldest 55 years, the peak being at 7 years of age (Table I).

TABLE I.—*Distribution of Cases of Trichophytosis Capitis According to Age.*

	Age (years).	Number of cases.
Under	1	2
	1	19
	2	74
	3	112
	4	149
	5	189
	6	214
	7	240
	8	210
	9	170
	10	125
	11	116
	12	81
	13	29
	14	12
	15	4
Adults	17-55	38
		1784

Table II shows the sex incidence at various ages in trichophytosis capitis. These figures seem to indicate that androgens more than oestrogens have an inhibiting effect on trichophytosis capitis.

TABLE II.—*Distribution of Cases of Trichophytosis Capitis in Relation to Sex and Age.*

Age (years).	Males.	Females.
1-13 .	961 .	769
14-15 .	6 .	10
Adults .	1 .	37
Total .	968 .	816

TREATMENT.

Kerion Celsi is a self-limiting disease. It causes natural epilation and heals easily with wet dressings and simple antiseptic preparations, often with atrophic scarring.

In the superficial mycoses of the scalp, trichophytosis and favus, the therapy of choice was Roentgen ray epilation. In cases in which irradiation was for some reason withheld it often became necessary to resort to it later. Roentgen ray epilation is contra-indicated in children under 3 years, but we often ignored this rule in cases where radical familial treatment was required.

Children approaching puberty were sometimes given the chance of spontaneous cure. On the other hand, we insisted on Roentgen treatment of the mothers. Their disease started presumably in childhood, but had not disappeared at puberty, and continued to persist as a permanent source of infection or reinfection for their children.

Before irradiation the hair was cut short to 0.5 cm. Small unco-operative children, whom we could not teach in several sessions to lie quietly, received an anaesthetic. In a few selected cases when only one or two neighbouring areas were involved a single epilation dose of 450r was given, but usually the Adamson-Kienbock technique was employed exclusively with administration of 375 to 400r to each field. Epilation was occasionally followed by a slight inflammatory reaction which was easily controlled. In cases when the defluvium was not complete, caps of colophonium with yellow beeswax or lemon juice with sugar or strips of adhesive plaster were used. With the epilation of all the healthy hair the preliminary part of the treatment was finished. The full extent of the infection was now established and foci became evident which were not recognizable before. Roentgen rays do not, of course, kill the fungus; they produce temporary atrophy of the papillae of hair. The infected hairs have lost their connection with the papillae and remain as foreign bodies in the skin. The way is clear for the real treatment with the aim of destroying the fungus and the spores by vigorous mechanical removal of all

diseased elements and prolonged disinfection of the scalp. The head is washed every day, except Saturday, with hot water and soap, dried and painted with 5 or 10% tincture of iodine because of its fungicidal and peeling properties. Once a week, or more frequently if the parents' co-operation is poor, the children visited the clinic. Fragments of infected hair were pulled out with a plain cilia forceps, and scales were removed in search of hidden stumps. Some of these were so embedded in the skin that they had to be extracted with a sharp-pointed scalpel or even with a curette. After 4 to 6 weeks of such a treatment the scalp was usually clear, with no obtainable material for microscopic examination. The children returned to school but they continued to visit the clinic for another month, when the regrowth of hair started.

Recurrences.—There were about 5% relapses. In fact we dealt with 105 cases of relapses, but 13 came from other sources. It is often difficult to differentiate between a recurrence, i.e. the reappearance of the disease because it was not radically cured, but continued to exist for some time in a latent stage, and a reinfection from a new contact. Here the symptom-free interval is important. The longer it lasted, the greater the likelihood of reinfection and vice versa.

Out of our 92 original "relapses" a certain number were reinfections. The real relapses were due partly to parents' non-co-operation and partly to unsatisfactory x-ray epilation, but mostly to inadequate after-treatment. Nevertheless, relapses also occurred in cases where the treatment in all its stages had been carried out with extreme care and thoroughness, especially when the first x-ray epilation had failed. Here the resistance of the fungus was to blame. In all relapsed cases cultures were made, and revealed *T. violaceum*.

The treatment of relapses is more complicated. We never hesitated to use x-ray epilation for the first time. In the hand of an experienced operator it is almost absolutely safe. Further x-ray epilation warrants caution, and a fair trial with local conservative measures was therefore given. In 5 cases an ointment containing 2 mg. testosterone per gramme of soft paraffin was rubbed twice daily into the affected areas, but with no response. Other cases were treated with frequent manual epilation combined with the application of strong fungicides and phenol, which caused frequent peeling and sometimes a desired inflammation or suppuration. The result was, however, rarely satisfactory. Eventually and with an individual approach to each case and additional x-ray epilation was administered 9 months after the previous dose. Dry thin hair intermingled with greying hairs constitute a definite contra-indication for further x-ray treatment.

Seventy-four patients with relapses were given a second Roentgen ray dose, 5 a third, and 2 even a fourth. The remaining 11 children show signs of slight Roentgen damage and are receiving various kinds of local treatment with

little response as yet and with the hope that the infection may die out at puberty.

SUMMARY.

Tinea capitis is endemic in Israel, trichophytosis being the main variety. Out of 1877 adequately followed cases in the clinic of the Municipal Hospital Hadassah in Tel-Aviv for the past 17 years, 1784 were of trichophytosis, 75 favus and 18 kerion Celsi.

In trichophytosis capitis there is a preponderance of boys before the age of 13 years and of girls at the age of 14 and 15. Among 38 adults there was only 1 male. The view is expressed that androgens more than oestrogens have an inhibitory effect on trichophytosis capitis.

The importance of a family case-finding survey is stressed, to be followed by the simultaneous treatment of all the affected members of the family to prevent reinfection.

Roentgen ray epilation was the treatment of choice in ringworm of the scalp. The after-treatment, consisting of prolonged disinfection of the scalp with 5 or 10% tincture of iodine and painstaking mechanical removal of the diseased hair, constitute an essential part of therapy.

Relapses occurred in about 5%. They were due to lack of co-operation of the parents, inadequate Roentgen and post-Roentgen treatment or to the resistance of the fungus. In a high percentage of relapses an additional x-ray epilation was given with no resulting permanent damage.

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DERMATOSIS BULLOSUM LINEARIS

"BULLOUS KERATOGENOUS AND PIGMENTARY DERMATITIS WITH BLOOD EOSINOPHILIA IN NEWBORN GIRLS" WITH INCONTINENTIA PIGMENTI.

MICHAEL J. SCOTT, M.D.

Seattle, Washington, United States of America.

IN February 1953 Asboe-Hansen reported four cases of a cutaneous disease which could not be satisfactorily classified. He termed this syndrome "bullous keratogenous and pigmentary dermatitis with blood eosinophilia in newborn girls". It consisted of papules, vesicles and bullae located primarily on the extremities of female infants with a tendency to linear distribution. In each case there was eosinophilia which subsided as the lesions disappeared. Two of the patients were sisters (whose brother was normal); the remaining two cases apparently involved the only child in each of two families. The syndrome must be differentiated from incontinentia pigmenti, dermatitis herpetiformis, epidermolysis bullosa, dermatitis medicamentosa, and acrodermatitis enteropathica.

To the four original cases may be added the following one. It is interesting to note that this patient subsequently developed incontinentia pigmenti, which suggests some relationship between these dermatoses.

CASE REPORT.

An infant girl was born on 14 August 1953. She was the second child of parents whose family history failed to reveal any hereditary disturbance which might be related to the infant's dermatosis. The patient's elder sister, born August 1952, and her younger brother born in November 1954, had no cutaneous disturbance. The mother did not receive any pre-partum medication to suggest a diagnosis of dermatitis medicamentosa in the infant. The obstetrician and pediatrician examined the baby immediately after delivery and noted a vesicular dermatitis on the upper and lower extremities. The vesicles persisted and new ones appeared, despite the use of aureomycin ointment. The patient was referred to me two weeks after birth.

At that time numerous vesicles and bullae were present in longitudinal linear distribution on both upper and lower extremities, and on the buttocks. The eruption was roughly symmetrical and affected both extensor and flexor aspects of the extremities. Most vesicles arose from normal coloured skin,

but slight erythema was present at the periphery of ruptured lesions. The temperature was normal and there were no systemic symptoms (Fig. 1).

A diagnosis of "bullous keratogenous and pigmentary dermatitis with blood eosinophilia in newborn girls" was considered. With this in mind a blood count was immediately done and 16% eosinophilia (1984/c.mm.) found. An intact vesicle was excised for histological examination by Dr. Wilbert Sachs. Since a biopsy was obtained in only one of the four original cases, and this apparently not from an active area, there was little basis for comparative histology. Dr. Sachs was therefore asked to characterize this syndrome histologically, if possible, and he submitted the following report :

"The vessels of the mid and upper cutis are dilated and there is a pronounced focal and diffuse infiltration composed of small round cells, wandering connective

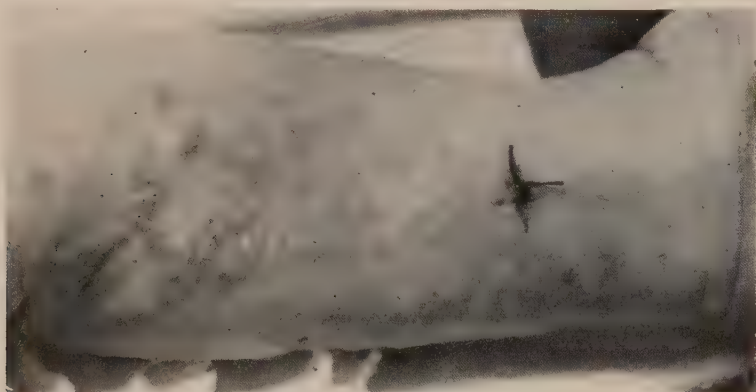


FIG. 1.—Inner aspect of left leg.

tissue cells and numerous polys including eosinophils. There is some interstitial oedema and a sparse fibroblast cell reaction. The adnexal tissue appears to be normal. The epidermis is irregularly acanthotic. The palisade layer is intact. In several areas there are various sized vesicles within the epidermis itself. Some of these vesicles include polys and eosinophils. Some of the papillary capillaries are dilated and congested. There is no keratosis follicularis, no evidence of any accelerated dyskeratosis and there are no *corps ronds* present. This picture does not impress me to be one of incontinentia pigmenti. The pigmentation that one usually finds is not present and there is entirely too much reaction for this diagnosis to be possible. The vesicle present in this specimen is within the epidermis and of a slow duration, not developing rapidly as one would find in epidermolysis bullosa. Besides that, not only is it intra-epidermic but there is entirely too much reaction and I think the pathology here would definitely rule out the possibility of epidermolysis bullosa. I

cannot make the pathological diagnosis of Asboe-Hanson's syndrome because there is no precedent for microscopic diagnosis."

Progress and Comment

Except for eosinophilia, the laboratory findings, including cultural studies of the vesicle fluid for bacteria and fungi, were negative.

An ointment containing 5% ammoniated mercury in aquaphor and Lassar's paste was prescribed, and the involved areas were irradiated with cold quartz lamp (2500Å). Although new vesicles appeared, the dermatitis gradually subsided and eventually cleared entirely when the infant was about two months of age. The lesions always had a linear distribution, but did not appear on sites of trauma as do those of epidermolysis bullosa. Temporary, slight, residual scaling on the sites of former vesicles was observed but no residual hyperpigmentation or verrucous keratosis, as were reported in the other cases. It seems possible that this verrucous keratosis and hyperpigmentation are a result of secondary infection and not an actual part of the syndrome, and the topical application of ammoniated mercury and cold quartz irradiations may have prevented these sequelae, as there was no secondary infection. The type of hyperpigmentation reported in the four original cases did not resemble the pigmentation characteristic of incontinentia pigmenti, but rather the ordinary pigmentation which frequently follows healing bullae or erosions. The sites of many lesions on my patient, however, did become slightly depigmented and exhibited slight, atrophic scarring which is still faintly visible. The eosinophil count remained elevated until the vesicles subsided, when the patient reached two months of age.

In September 1954 asymptomatic hypopigmented and hyperpigmented punctate macules up to 1 mm. in diameter occurred bilaterally in linear distribution along the dermatomes of the thoracic nerves. A diagnosis of incontinentia pigmenti was made. These lesions were not preceded by vesicles. Both the whitish and the darker macules were discrete, irregular in shape, with angular borders. They gradually enlarged over a period of three months to about 3 mm. in diameter; older lesions became more pronounced and new puncta continued to appear. These pigmentary changes were confined to areas over the ribs, in contrast to the vesicular dermatitis present at birth which was limited to the extremities and buttocks and was not followed by pigmentation. Eosinophilia was not present either when the lesions of incontinentia pigmenti appeared, or as they progressed. Therefore the sites of distribution, course of the syndrome, pigmentation, blood eosinophilia and the histological appearance were all points of differentiation between "bullous keratogenous pigmentary dermatitis with blood eosinophilia in newborn girls" and incontinentia pigmenti.

SUMMARY AND CONCLUSION.

A case of "bullous keratogenous and pigmentary dermatitis with blood eosinophilia in newborn girls" occurring in a female infant who subsequently developed incontinentia pigmenti is reported. The lesions of the former were present at birth and were confined to the extremities and buttocks, disappearing after two months; the lesions of the latter appeared at approximately one year of age, were limited to the thoracic region and have continued to progress. Eosinophilia was present during the early phase but not during the later phase. The sites of distribution, course, pigmentation, eosinophil count, and histological appearance are points of differentiation between these diseases. The sequels of hyperpigmentation (not resembling that of incontinentia pigmenti) and verrucous hyperkeratosis reported in the four original cases were, in my opinion, the result of secondary infection and not an essential part of the syndrome. If this is true, the syndrome would better be termed dermatosis bullosum linearis, since the most characteristic feature consists of vesicles and bullae occurring in linear distribution. The cause of the eosinophilia is obscure.

The occurrence of these two unusual, sex-linked dermatoses in the same person strongly suggests they are related ectodermal anomalies. It is conceivable that both are variants of some congenital ectodermal defect, and that neither is a disease entity. Many other variants undoubtedly have yet to be reported, and when they are a more satisfactory nomenclature may be arranged. When this is accomplished, the present terminology utilized to describe these phenomena may also be discarded.

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OBITUARY

DR. H. G. ADAMSON.

DR. H. G. ADAMSON, the doyen of British Dermatology, died on 6 July 1955 in his 90th year. He was a student at St. Bartholomew's Hospital from where he qualified in 1889 and after doing a number of resident appointments he was appointed, in 1893, physician to the North-Eastern Hospital for Children (now the Queen Elizabeth Hospital) and at the same time became assistant to Dr. Pringle at the Middlesex Hospital. It was during this period that he made a special study of scalp ringworm and produced work which was to become classical. For the first time the way in which the fungus attacked the hair was demonstrated. He showed that the fungus first attacked the skin of the scalp and then passed across to the hairs just below the mouth of the follicle, a point which had been missed by previous observers. He was able to show that Sabouraud, by using too strong a solution of caustic potash (40%), by heating the preparation and by using pressure on the cover glass when examining ringworm hairs, had succeeded in destroying the mycelium in the hairs. By using a weak solution of potash (5%), avoiding heat and pressure, he was able to demonstrate the mycelium lying beneath the spore sheath in microsporon ringworm and showed that it ended in a fringe above the hair bulb, which has since been known as Adamson's fringe. This work has been confirmed by subsequent observers and remains unchallenged to-day. He also introduced an improved method of staining fungus in the hair.

In 1896 Adamson, for private reasons, gave up work in London and went into general practice for seven years; but he returned to London in 1903 and was again appointed to the North-Eastern Hospital for Children, this time as a dermatologist, and also to Paddington Green Children's Hospital. On Dr. Pringle's advice he also became assistant to Dr. Colecott Fox at the Westminster Hospital. Even at a time when British Dermatology was fortunate to possess a number of men of world wide reputation, he was particularly favoured in having two such mentors: Colecott Fox, a man of intense industry and of meticulous regard for clinical detail, whose contributions on a great variety of subjects were of the highest quality; and Pringle, a person of great charm and elegance, artistic and musical, with a singular flair for diagnosis, which some might have thought was casual and haphazard but was in fact the result of the same minute attention to detail. In all Adamson's subsequent work the influence of these two men is evident.

In view of his appointments to two children's hospitals it is natural that much of Adamson's early work and indeed some of his later work should be directed to skin diseases in children. Papers on pemphigus neonatorum, impetigo contagiosa, lichen pilaris seu spinulosus, hydroa vacciniforme, ecchyma vacciniforme, lichen planus in children and napkin eruptions appeared in rapid succession, and in 1907 he published a book on *Skin Affections of Children* which though small in size was amazingly comprehensive and a model of its kind. He later wrote the section on skin diseases in Garrod, Batten and Thursfield's *Diseases of Children*.

At this time he was also assisting Dr. Colecott Fox at the Metropolitan Asylums Board ringworm school at the Downs, Sutton, and while there he developed the five-area method of x-raying the scalp, improving on a method originally described by Kienbock, which has come to be known as the Adamson-Kienbock method and is still very largely employed. He published the details of his method in the *Lancet* in 1909.

In the same year he was appointed physician for diseases of the skin at St. Bartholomew's Hospital and resigned his appointments at the two children's hospitals. From this time onwards until his retirement in 1928 he published a large number of papers on a wide variety of subjects which added greatly to dermatological knowledge. He also contributed a number of articles to the section on skin diseases in the 2nd Edition of Allbutt and Rolleston's *System of Medicine*. In 1911 he was elected a Fellow of the Royal College of Physicians and in the following year delivered the Goulstonian Lectures entitled "Modern Views upon the Significance of Skin Eruptions" in which he propounded many original views especially with regard to the significance of the patterns and distribution of skin eruptions, a subject which he elaborated in subsequent papers in the *British Journal of Dermatology*.

He was a great student of dermatological literature, especially that of the nineteenth century, and contributed a number of interesting papers on this subject to society meetings. It must be remembered that in his early days Tilbury Fox's book was the standard text-book of dermatology and that his *Atlas*, which was largely made up of the original plates of Willan and Bateman, must have been very familiar to Adamson. No doubt the view he took that eczema was a specific condition which could always be differentiated from other forms of catarrhal dermatitis was largely due to his appreciation of the careful clinical observations of these pioneers. Only a few years before his death he wrote a vigorous reply to an article which disparaged Tilbury Fox's work.

He was an active member of the old Dermatological Society of London and later of the Dermatological Section of the Royal Society of Medicine, of which he was president from 1921-23. He constantly showed cases, and his contribution to discussions were always weighty. He was president of the British Association of Dermatology in 1924 and treasurer from 1925-34. At the VIII International Dermatological Congress in Copenhagen in 1930, of which he was Vice-President, he opened the discussion on "The Tuberculides of the Skin and their Treatment" of which he was an admitted authority, having previously written papers on Bazin's disease, on lichen scrofulosorum and on acne scrofulosorum. He had been present and read a paper at the III International Congress in London in 1896 and his last public appearance was at the X Congress in London in 1952. He was also an honorary and corresponding member of a number of foreign dermatological societies and he was particularly proud of his honorary membership of the New York Dermatological Society, the oldest of all dermatological societies.

Adamson was a retiring person and never courted the limelight, but to those who had the privilege of working with him he was always ready to give the full benefit of his boundless knowledge. He was an inspiring teacher and was beloved by his colleagues and students. He was no mean artist and after his retirement he devoted much of his time to his beautiful garden in the country. Soon after the first World War he lost his only son after a long and distressing illness, but is survived by his devoted wife.

A. M. H. G.

DR. ARTHUR RUPERT HALLAM.

RUPERT HALLAM died at his home in Somerset on 29 August 1955 at the age of 77. He was the eldest son of Dr. Arthur Hallam who in addition to being in general practice was also an honorary surgeon to the Royal Infirmary, Sheffield, so that his association with the Hospital in which he was destined to spend all his active life started at a very early age. He received his medical training at Edinburgh University where he graduated in 1901, taking the M.D. in 1905.

When a resident at the Royal Infirmary, Sheffield, the then dermatologist, Dr. Cocking, had a prolonged illness during which Hallam had care of his patients. His interest in dermatology, already aroused in Edinburgh, was thereby established and

he decided to specialize in this subject. He always regretted that because of the death of Dr. Cocking in 1911 he had no opportunity of working in continental clinics before being appointed to the honorary staff.

In addition to being dermatologist, he was, as junior member of the staff, also put in charge of the infant x-ray department. This fortuitous appointment was invaluable when the place of x-ray in skin therapy was realized, and as a direct consequence of this there has always been a close liaison between the dermatologists, radiologists and radiotherapists in Sheffield.

During the Great War he served in the R.A.M.C. with the rank of Major, and after the war he started to create his department. In many ways, Hallam was ahead of his time. By 1930 he had established a department with a full-time clinical assistant of what would now be Senior Registrar grade, and in the original department which he planned were incorporated many features he had seen when abroad. The department was enlarged in 1949 and was named the Rupert Hallam Department of Dermatology as a tribute to the work he had done in Sheffield.

Dr. Hallam was very conscious of the dangers of working in isolation and took every opportunity of meeting his colleagues both in this country and abroad. He was an original member of the British Association of Dermatology, became President in 1936 and was elected an honorary member a few years ago. He also helped to found the North of England Dermatological Society, of which he was President in 1930, the year after its formation. His holidays were usually spent visiting various clinics in Europe and he often recalled with great pleasure the International Congresses held in Budapest and Copenhagen.

Since he was insistent that any potential dermatologist must first of all be trained in general medicine, he himself obtained the M.R.C.P. in 1936, and was elected to the Fellowship in 1940. He always tried to have some line of investigation active in his clinic and his main interests were in the common dermatoses; thus his best known published works are on papular urticaria, chilblains, psoriasis and dermatitis. As a teacher he was inspiring and there was never any difficulty in persuading students to attend the dermatological department. His punctuality in the department was a byword and he never allowed anything to interfere with his hospital clinics. In addition to his main unit, he gave dermatological service to the Sheffield Royal Hospital, the City General Hospital, Chesterfield Royal Hospital and for a time, as a temporary measure, to Derbyshire Royal Infirmary.

He retired in 1944 and as soon as he could, he settled in the South West, first in Cornwall, then Dorset and finally in Somerset. There he pursued his beloved hobbies—painting, gardening and walking and to these he added sailing. His skill as an artist was well recognised and his self-portrait which hangs in the Infirmary Staff Room is masterly.

Those of us who had the privilege of working closely with Hallam realize the value of his contribution to British Dermatology and count it a great honour to have been numbered amongst his friends.

He was not an easy man to know: his tall, dignified, austere figure was somewhat forbidding to the casual acquaintance but those who were fortunate enough to be his friends and to work with him found him to be a most loyal and entertaining adviser and colleague.

H. R. V.

BOOK REVIEWS.

EXPERIMENTAL CARCINOGENESIS.*

THE author's investigations, the substance of this book, began in a dermatological clinic over thirty years ago, and owing to lack of facilities their publication has been delayed for ten years. The practising dermatologist will find most interest in the first of the three chapters, recording experiments on epithelial proliferations of precancerous and cancerous fashions. The author began investigations with Pityrol, a tar of disagreeable colour and odour derived from rice polishings, and an almost infallible remedy for certain forms of eczema. Its smell was lessened when incorporated in ointments and the colour and odour were decreased when zinc oxide and starch were added to a lard base. The volatile part of the tar does not induce epithelial or connective tissue proliferation, and the epithelioma-producing factor is found in the neutral portion of the non-volatile part. In coal tar pitch this occurs in the volatile part. Tars from cane sugar, palmitic acid and from crude petroleum distillates have no carcinogenic properties.

The author looks on a Paget cell as a kind of solitary intra-epidermal epithelioma with the potentiality of becoming malignant, and on Bowen's disease as a sort of epithelial malformation corresponding to the premature stage of an experimental cancer.

G. W. B.

DISORDERS OF THE VULVA.†

DR. HUNT's book on Disorders of the Vulva has rightly come to be regarded as one of the best on this subject.

It is written equally for the dermatologist and gynaecologist. Although, almost of necessity, it contains much that will be unfamiliar to gynaecologists, and not all of it acceptable to her dermatological colleagues, no one can fail to be impressed by the immense amount of careful personal observation which has gone into this book. Neither can they fail to be impressed by the agreeable and scholarly way in which it is written, and the outstandingly excellent quality of the coloured illustrations.

It may well be that, by the time another edition of this book is called for, the influence of septic foci and the value of arsenic and vitamin A in treatment may prove to be of less importance than they are given in this edition. Dr. Hunt appears to have modified the view that she expressed in the first edition about the relationship of atrophic lichen planus and lichen sclerosus to kraurosis. Lichen sclerosus is considered probably to be an entity distinct from atrophic lichen planus. Vulval atrophy results much more frequently from the former than the latter.

Dr. Hunt is to be congratulated on this second edition, which should be in every dermatological and gynaecological library.

H. J. W.

REGIONAL ALLERGY.‡

THIRTY-NINE physicians have contributed to produce a survey of the allergic problems of the United States, Canada, Alaska, Mexico and Cuba. Each section contains a brief introductory note about geography, climate and social structure, followed by a description of the molds, pollens and other allergens of the region. It is full of fascinating information invaluable to American allergists or asthmatics, but there is little which concerns the British dermatologist.

H. T. H. W.

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NORTH OF ENGLAND DERMATOLOGICAL SOCIETY.

Sheffield, 19 April 1955.

Familial Dermatitis Herpetiformis.—Dr. P. D. C. KINMONT.

A man aged 25.

Early in 1955 he developed a vesicular eruption on the sides of the neck, the forehead and the root of the nose. Irritation was severe.

On examination there were small groups of vesicles and excoriated papules on a background of erythema behind the ears, on the sides of the neck, on the forehead and at the root of the nose. The skin on the trunk and limbs was unaffected.

Family history.—His brother was seen in September 1951 at the age of 24. He then had small groups of herpetiform vesicles on the back which extended out in annular form, leaving central pigmentation. The eruption extended from the base of the neck, over his shoulders down to the waist. Diagnosis of dermatitis herpetiformis was made and the irritation and eruption was controlled with sulphapyridine, 0.5 g. daily.

Investigations.—Hb. 102%. RBC 4,400,000. WBC 13,000. (Neutros. 56%, old metamyelocytes 1, eos. 7, lymphos. 31, monos. 5%). The red cells and platelets appear normal in the film.

Biopsy from neck.—The epidermis shows inter- and intra-cellular oedema with formation of bullae between the epithelial layers and between the epidermis and dermis. There is a fairly heavy inflammatory reaction in the corium. This is mostly perivascular and consists of polymorphs, lymphocytes and histiocytes. The appearances are suggestive of dermatitis herpetiformis.

Treatment.—He was given diamino-diphenyl sulphone 50 mg. daily and the eruption cleared within two weeks. He has remained controlled on a maintenance dose of 50 mg. on alternate days since.

Manchester, 10 May 1955.

Xanthomatous Biliary Cirrhosis.—Dr. J. SAVATARD.

A woman aged 54.

History.—In 1953, after 3 months' nausea and intermittent pain in the upper abdomen, she became jaundiced and developed generalized itching. Since then the jaundice has remained, though it has varied in depth. She has lost 4 stone in weight. Soon after the jaundice appeared xanthomata were noticed on the elbows, and these have become more numerous.

Past history.—Nil relevant.

Family history.—Her father was said to have gallstones, but there was no other history of liver disease or of xanthomata.

Examination in 1955 revealed an obese deeply jaundiced woman with multiple tuberoso xanthomata on the elbows, upper arms and neck. Xanthomatous deposits were present in the palmar creases and she had xanthelasma palpebrarum.

The liver was greatly enlarged and firm, the edge being felt 5 finger-breadths below the costal margin. No dilatation of the superficial abdominal veins was seen.

The spleen was not palpable.

Investigations.—Blood count—normal. Sternal marrow examination—normal. Laparotomy performed in August 1954 showed no evidence of gall-bladder disease or gall-stones. A biopsy was taken from the greatly enlarged liver.

Histology of liver (Dr. Crawford).—The section shows a rather cellular periportal cirrhosis, in parts well marked around the smaller bile ducts.

There is irregular invasion of the periphery of the liver lobules in places, by extension of the fibrosing process towards the centre of the lobules, and scattered bile plugs in some of the smaller canaliculi.

Urine—Urobilinogen increased.

ESR—82 mm. in 1 hour.

W.R.—Negative.

Liver function tests: Van den Bergh. Immediate direct: bilirubin, 4.8 mg. %; Alk. phosphatase, 49 units; thymol turbidity, 9 units; thymol flocculation, 1; serum gold, 1; proteins, 8.4 g. % (alb. 4.2, glob. 4.2); cholesterol, 1,250 mg. %; ester cholesterol, 233 mg. %.

Serum cholesterol of brother, 162 mg. %; sister, 144 mg. %.

Course.—The general condition of the patient has remained good, but a diet low in animal fat, and the administration of methyl testosterone 20 mg. daily and thyroid extract 1 g. daily have had no effect on the serum lipid levels. The methyl testosterone has relieved her itching.

Acrodermatitis Continua (Hallopeau).—Dr. CECIL W. MARSDEN (for Dr. J. H. TWISTON DAVIES).

A woman aged 63 years.

Forty years ago the eruption began with pustules at the edge of the nail on the left thumb. These healed, leaving a red glazed area which gradually spread over the terminal phalanx, mainly on the volar aspect. The nail was gradually destroyed. Other fingers became involved in the following order: right thumb, left and right middle fingers, left index finger. There was an interval of several years between the involvement of each finger. Two years ago the right little finger became involved.

All affected fingers present red glazed areas on the terminal phalanges with a collar of white skin at the margin. There are pustules on the glazed area.

History and general physical examination—not relevant.

The patient has attended at various hospitals in the area, being investigated without result and treated without benefit.

Culture from pustule (1949)—scanty *Staphylococcus albus* isolated. Repeated 26.v.1955—sterile.

W.R.—negative.

Treatment.—1922: x-ray therapy (dose unknown)—no benefit. 1949: Penicillin parenterally (dose unknown)—no benefit. 1955: Tetracyclin orally (dose unknown)—no benefit.

The left hand has been treated with hydrocortisone ointment 2½% for three weeks without benefit.

Pityriasis Rubra Pilaris in Father and Son.—Dr. JOHN K. MORGAN (for Dr. J. H. TWISTON DAVIES.)

A man aged 36 years and his son aged 4 years.

The father has had hyperkeratosis of the palms and soles and follicular plugging of the hands and arms for as long as he can remember, and is not troubled by it.

The child, at the age of four months, developed a scaly erythema of the face. By the age of two years he had developed a dry scaling erythema of the limbs as well. Until this time the condition was thought to be xeroderma, but in the past two years it has become more extensive, involving the face, limbs and trunk, and has been regarded as pityriasis rubra pilaris.

The father was seen for the first time recently and it had not been realized that he suffered from the same condition.

The father is able to trace 66 uncles, aunts, cousins, nephews and nieces, and none are affected. They have not been examined. The father has one other child, a boy, and he is normal.

The child was given vitamin A 30,000 units daily for a year up to June 1954 without appreciable effect.

Dublin, 4 June 1955.

Linear Scleroderma with Epilepsy and Facial Hemiatrophy.—Dr BETHEL SOLOMONS.

A boy aged 7.

In September 1953 baldness was noted on the front of the scalp, and gradually spread back from the forehead to the vertex. In March 1954 he started epileptic fits. Until he had the fits he was quiet, well behaved and intelligent, but soon became talkative and unruly. In April 1954 nystagmus towards the left side was first observed with the fits.

Since April 1955 the fits have been controlled to a great extent by daily doses of amytal gr. $\frac{1}{2}$ *t.i.d.* and epanutin gr. $\frac{3}{4}$ *b.i.d.*, but he has occasional fits. The alopecia has not spread for six months. His moodiness is less marked. No relevant family or other history.

Examination.—A linear sclerodermatous lesion extends from the forehead towards the vertex on the right side of the midline, $4\frac{1}{2}$ in. long by $\frac{3}{4}$ in. wide. Slight right-sided facial hemiatrophy. General systemic examination normal.

Skiagram of skull and chest normal.

Urine, blood urea, blood count, CSF, normal. Blood WR and Kahn negative.

Electroencephalogram (Dr. J. G. Kirker).—This record shows moderate generalized abnormality with no focal or specifically epileptic changes. It suggests a convulsive tendency, associated perhaps with some structural pathology of a diffuse type.

Moniliasis.—Dr. F. J. O'DONNELL.

A boy aged 7.

History.—Onset at infancy. Has been under treatment since 1950. No other child in the family is similarly affected.

Examination.—On the centre of the forehead and on the cheeks there are large hard papules, topped with dry and firmly adherent scales. The lower half of the nose and chin are covered with similar hard and thick scales (Fig. 1).

The entire scalp also is scaly, but the scales are softer and are shed, in contrast to the face where the scales accumulate thickly, and may cause slight bleeding if removed.

There is a small keratotic papule on each lower eyelid, and on the rims of the ears there are fine adherent scales.

The lesions on the face have never been soft or infected.

The nails of both hands and feet are very thickened.

At one time there were large scaly patches on the hands and feet, but these cleared up.

The child suffers from aphthous stomatitis, which flares up periodically.

Investigations.—Repeated examination of scales from the face revealed neither spores nor hyphae.

Skiagram of the chest is normal. There is a moderate hypochromic anaemia; no eosinophilia.

Histology (Dr. H. Haber).—The epidermis shows hyperkeratosis, acanthosis and immigration of round cells and some micro-abscesses. The upper corium is densely infiltrated by round cells. The histology excludes Darier's disease.

Slides stained with McManus stain show that the epidermis is invaded by masses of mycelium and spores. The case could be a generalized moniliasis, and deep scrapings from different sites should be examined from this point of view.

Treatment and progress.—There has been very slow but definite improvement in the condition of the boy's face, and, as mentioned, large patches on the hands and feet have completely cleared.

50,000 units vitamin A *t.i.d.* have been given over long periods, and Grenz ray at intervals.

A strong salicylate ointment is applied regularly to the face, otherwise the scales would heap up, as distinct from any lateral spread of the lesions.

Dr. Ingram suggested the diagnosis of acrodermatitis enteropathica.

Postscript.—Culture has grown *Candida albicans* from scalp, mouth, cheek and nails. Treatment with Mycostatin has been started.



FIG. 1.

CURRENT LITERATURE.

SYNTHETIC ANTIMALARIAL DRUGS IN CHRONIC DISCOID LUPUS ERYTHEMATOSUS AND LIGHT ERUPTIONS. JOHN ROGERS and OWEN A. FINN. (1954) *Arch. Derm. Syph., Chicago*, **70**, 61.

The authors record the results of 45 cases of chronic lupus erythematosus treated in 1952 with mepacrine and 45 cases treated in 1953 with chloroquin. These were essentially similar, toxic effects were few and slight, but chloroquin has the advantage of not staining the skin. Chloroquin appeared to be more effective than mepacrine in controlling light-sensitive eruptions.

J. K.

SULPHYDRYL GROUPS AND DISULPHIDE LINKAGES IN NORMAL AND PATHOLOGICAL KERATINIZATION. E. J. VAN SCOTT and PETER FLESCH. (1954) *Arch. Derm. Syph., Chicago*, **70**, 141.

It is generally assumed that the disulphide bridges in keratin result from the oxydation of sulphydryl groups of cystine in the stratum Malpighii and that the latter are confined to the Malpighian layer and the former to the stratum corneum. The present investigation shows that significant amounts of sulphydryl are found in all types of keratin and that the disulphide concentration remains the same in the stratum corneum as in the Malpighian layer. This gives strong support to the theory that keratinization starts deep in the Malpighian layer; conversion of sulphydryl to disulphide does not appear to occur above this depth.

J. K.

HISTOPATHOLOGICAL DIAGNOSIS OF MALIGNANT MELANOMA. MOLLEURUS COUPERUS and RUFUS C. RUCKER. (1954) *Arch. Derm. Syph., Chicago*, **70**, 199.

The authors have studied histologically 179 cases of malignant melanoma of the skin. The junction naevus presents the chief problem in differential diagnosis, but if it is associated with one or two of the following primary criteria a diagnosis of malignant melanoma can be made. These are: Inflammatory infiltrate at the periphery of the lesion, more than an occasional mitotic figure, giant cells with a single bizarre nucleus, marked pleomorphism, general enlargement of all tumour cells, and tumour cells and mitoses in the epidermis. Criteria of secondary importance but of value as supplementary evidence are: Melanin pigmentation, hyperchromatism of the nucleus, prominence of the chromatin network and of the nucleoli, alveolar grouping of the tumour cells, junctional features, multinucleated giant cells, peripheral rete peg prolongation, ulceration and dysjunction of the tumour cells.

J. K.

DERMATOLOGICAL PROBLEMS IN THE RAILROAD INDUSTRY RESULTING FROM CONVERSION TO DIESEL POWER. WILLIAM B. GUY. (1954) *Arch. Derm. Syph., Chicago*, **70**, 289.

Since diesel engines came into use the number of cases of occupational dermatitis in railroad workers increased so that it has now become a problem. There are two main causes; diesel fuel itself and chrome salts used as rust preventers in cooling systems. (*Verb. Sap.* to our own railways is perhaps advisable in view of similar proposals here.)

J. K.

SOME HISTOLOGICAL ASPECTS OF CERTAIN BULLOUS DISEASES. ARTHUR B. HYMAN. (1954) *Arch. Derm. Syph., Chicago*, **70**, 336.

The author concludes that completely intra-epidermal, acantholytic, non-tension bullae are, except for Hailey and Hailey's disease, diagnostic of pemphigus, but that subepidermal bullae do not rule out pemphigus. Subepidermal tension bullae with eosinophilia are probably dermatitis herpetiformis. Subepidermal bullae associated with necrosis of adjacent epidermal cells and oedema of the upper dermis and extravasation of red cells are probably due to erythema multiforme. Bullae with signs suspicious of acantholysis which are partly intra-epidermal and partly subepidermal or with heavy cellular infiltrates are not diagnostic. Cytological examination is, at best, only corroborative; the polarizing microscope may be useful. The histological picture must not be accepted as diagnostic without clinical evaluation of the patient.

J. K.

TREATMENT OF BENIGN PIGMENTED MOLES. GORDON H. EKBLAD. (1954) *Arch. Derm. Syph., Chicago*, **70**, 399.

Intradermal naevi do not become malignant and if removal is required, simple and minimal measures are sufficient. Compound and junction naevi should be excised. The difficulty in many cases of deciding clinically to which particular type a lesion belongs is stressed, but it is comforting to be told that the annual incidence of melanocarcinoma is 1.8 per 100,000 of the general population and that, as the average individual has 15 to 20 pigmented moles, little more than one in 1,000,000 become malignant each year. J. K.

RADIOBIOLOGICAL MECHANISMS IN THE SKIN. MYRON H. KULWIN and HANS M. BULEY. (1954) *Arch. Derm. Syph., Chicago*, **70**, 417.

Radiation effects are not simply due to a projectile striking a target. The action of hydrogen peroxide produced by ionization is of great importance though it must not be considered the only mechanism. Nuclear substance is ten times more radio sensitive than cytoplasm and the effect of ionizing radiation on chromosomal substance is closely correlated with the oxygen tension within the irradiated structure. Theoretically, chemicals may protect by competing for free oxidizing radicals, by decreasing the formation of these radicals, by shifting the redox potential of certain critical cellular constituents and by altering the metabolism of the animal. Practically it has been shown that sodium cyanide injected immediately before a lethal dose of irradiation considerably increases the survival rate of animals. (Perhaps in the future we shall all carry some prussic acid to consume when an H-bomb approaches.) J. K.

RELATIONSHIP BETWEEN RITTER'S AND LEINER'S DISEASE. HAROLD N. COLE, jr., RICHARD G. HODGES and FRANCIS F. SILVER. (1954) *Arch. Derm. Syph., Chicago*, **70**, 443.

From autopsy findings in one case of Ritter's disease and histological findings in two cases of Ritter's disease and one of Leiner's disease as well as clinical observation the authors conclude that Leiner's disease probably represents a modified, subacute form of Ritter's disease. The aetiology appears to be a staphylococcal infection in a patient whose susceptibility has been increased by lack of an essential nutritive factor, probably vitamin B. J. K.

GRANULOMA ANNULARE: RESPONSE TO MASSIVE DOSE THERAPY OF VITAMIN E COMBINED WITH PANTOTHENIC ACID DERIVATIVES. ASHTON L. WELSH. (1954) *Arch. Derm. Syph., Chicago*, **70**, 468.

The daily doses used were: "pantothenic acid derivatives," children 5 g., adults 10 g.; vitamin E, children 0.3 g., adults 1.25 g. Of the 9 cases treated, 8 cleared and one improved, 4 relapsed but cleared on further treatment. No controls were used. J. K.

OBSERVATIONS ON PORPHYRIA CUTANEA TARDA. LOUIS A. BRUNSTING. (1954) *Arch. Derm. Syph., Chicago*, **70**, 551.

Porphyria cutanea tarda is a rare disease, but is commoner than generally realized. A clinical survey of 34 cases seen in the past 9 years is given, and in 7 cases there were in addition abdominal or nervous symptoms. The disease is a chronic one appearing between the ages of 30 and 70, showing photosensitivity of the skin, melanosis, hypertrichosis, sclerodermatous changes in the skin, often with blistering and hepatic dysfunction. Alcoholism is frequently present. It is commoner in men than in women, and a familial incidence was noted. Treatment should consist in avoiding exposure to sunlight and alcohol or drugs likely to damage the liver. J. K.

SCALP THICKNESS AND THE FAT LOSS THEORY OF BALDING. STANLEY MARION GARN, SAMUEL SELBY and RICHARD YOUNG. (1954) *Arch. Derm. Syph., Chicago*, **70**, 601.

By means of soft x-rays the authors measured the scalp thickness at the bregma in 523 healthy subjects from 4 to 69 years of age. Males either equalled or exceeded females in scalp thickness and the scalp thickness in bald and non-bald men did not differ significantly. It is concluded that fat loss in the scalp is not the cause of male baldness. J. K.

MICROSCOPIC STUDIES OF FOETAL AND MATURE NAIL AND SURROUNDING SOFT TISSUE. BARTON L. LEWIS. (1954) *Arch. Derm. Syph., Chicago*, **70**, 732.

Up to the present it has been assumed that all the nail plate arises from the proximal nail bed, but the present studies show that the most superficial layer arises from one-half of the roof and

one-eighth of the floor of the nail fold, the intermediate layer from the proximal part of the nail bed, limited by the distal margin of the lunula (i.e. the so-called nail matrix), while the lowest layer arises from the distal half to two-thirds of the remainder of the nail bed. The hyponychium—the mass of keratin under the distal portion of the nail—is produced from a crescentic area of the most distal portion of the nail bed. (This is an abridgement of a thesis based on studies evidently more extensive than the first word of the title suggests.) J. K.

THE RESULTS OF OLD AND MODERN TREATMENT OF LUPUS VULGARIS. H. VAN RUNCKELEN and NIZET. (1954) *Arch. belges Derm. Syph.*, 10, 327.

In the present century treatment of lupus vulgaris has been divided into four periods. During the first, up to 1920, local measures, curetting, x-ray and Finsen lamp, were used; but from 1920 general measures, natural or artificial light therapy and the Gerson diet were gradually introduced and the authors were convinced that such general measures alone were effective. The third period, that of the war, limited the available treatment, and in an endeavour to find a substitute vitamin D was used but, because of fear of upsetting the calcium metabolism, the dose was restricted to one ampoule of Sterogyl per month until Fanielle and Charpy published their results.

Since then streptomycin, PAS and INAH have been used and the authors combine INAH with either streptomycin or PAS, though they still use vitamin D in suitable cases.

The illustrations show that clinical cure could be achieved by any of these methods, but modern methods are more effective as well as being simpler and cheaper. J. K.

STUDIES ON ALLERGIC SENSITIZATION TO CERTAIN TOPICAL THERAPEUTIC AGENTS.

RUDOLF L. BAER, FERDINANDO SERRI and CHRISTIANE WEISS-ENBACH-VIAL. (1955) *Arch. Derm. Syph.*, Chicago, 71, 19.

Patch tests were done on 743 selected dermatological patients. None reacted to benzoic acid, benzyl benzoate or ichthammol; less than 2% reacted to boric acid, aluminium acetate, menthol, naphthalan, soft paraffin and phenol; between 2% and 5% reacted to oxycholesterol, soft paraffin ointment, hydrous wool fat, nupercaine, resorcinol, salicylic acid and Vioform; over 5% reacted to ammoniated mercury, benzocaine, red mercuric sulphide, crude coal and other tars, pantocaine, Pragmatar, Quinolor compound ointment and Whitfield's ointment.

All 743 patients were not tested with all these substances.

J. K.

PRURITUS OF LIVER DISEASE (XANTHOMATOUS BILIARY CIRRHOSIS). JOHN H. HICKS and J. FRED MULLINS. (1955) *Arch. Derm. Syph.*, Chicago, 71, 46.

Xanthomatous biliary cirrhosis is the commonest cause of pruritus of liver origin. Jaundice and xanthomata may be late features of the disease, but elevated serum cholesterol, microcytic hypochromic anaemia and liver function tests showing minimal damage are found early. The pruritus is generalized, but the palms, soles and scalp are predominantly involved. It is controlled satisfactorily by methyltestosterone, but care must be taken because of its toxicity.

J. K.

KERATOACANTHOMA (MOLLUSCUM SEBACEUM). GEORGE W. BINKLEY and HERBERT H. JOHNSON, JR. (1955) *Arch. Derm. Syph.*, Chicago, 71, 66.

KERATOACANTHOMA. LEMUEL P. EREAUX, PAUL SCHOPFLOCHER and CLAUDE J. FOURNIER. (1955) *Arch. Derm. Syph.*, Chicago, 71, 73.

The first authors consider there are two types of keratoacanthoma, the single lesion related to ageing occurring on the exposed skin and the industrial type, which may be multiple, on skin exposed to oil or tar.

The second paper describes a patient who in 19 years had over 100 lesions. No metastasis occurred.

J. K.

GENERALIZED MONILIASIS IN AN ADULT WITH DIABETES MELLITUS AND DISSEMINATED SCLEROSIS. CH. KLÄRNER. (1955) *Derm. Wschr.*, 131, 361.

Nicolowski and Müller stress the presence of vesicular and pustular lesions in the neighbourhood of intertriginous ones in generalized moniliasis.

This morphological peculiarity was present in the case described, a woman aged 55 with diabetes mellitus and disseminated sclerosis. Candida was grown from the skin and also from the urine, and it was demonstrated in the sputum by injection into a rabbit.

Treatment consisted in control of diabetes; brilliant green solution and penicillin given for another reason brought about eventual recovery.

Increase of the sugar content of sweat favours the spread of monilia in diabetes. Peripheral vascular changes, such as are found in disseminated sclerosis, may be an additional factor favouring generalization of the infection.
W. G. T.

CLINICAL EXPERIENCES WITH A NEW RADIOACTIVE SUBSTANCE (STRONTIUM 90/YTTRIUM 90). G. PERSCHMANN. (1955) *Derm. Wschr.*, 131, 366.

Radioactive substances producing beta-radiation only have been known for some time. Low-Beer used phosphorus 32. He treated 301 patients with basal celled tumours, hyperkeratoses, warts and haemangiomata. This treatment was effective in 70–100% of cases. This substance has the disadvantage of being dangerous to those handling it and of not retaining activity for more than a fortnight.

In the search of a pure beta-ray producer, retaining activity for long periods and being easily handled, a Strontium 90/Yttrium 90 radiator has been developed. The applicators are of plastic material and have the shape of a collar stud. Twenty-six rodent ulcers, 3 squamous carcinomata, 1 precancerous lesion, 2 senile keratoses, 3 seborrhoeic warts, 18 warts and 2 cavernous haemangiomata were treated. The average dose was 1500r. Seven of the rodent ulcers required higher doses, 5000–7000r. The cosmetic results were satisfactory; 75% of the radiation is absorbed in the most superficial 3 mm. of the skin.
W. G. T.

ERYTHRODERMIA AFTER ISONICOTINIC ACID HYDRAZIDE. P. KELLER. (1955) *Derm. Wschr.*, 131, 193.

Neurological and minor dermatological complications have been reported previously after isonicotinic acid therapy. This is the first report of a severe erythrodermia occurring 19 days after 0.6 g. daily of the drug. After improvement a further attempt was made to administer the drug, but this caused a relapse.
W. G. T.

EXPERIENCES WITH A NEW BARRIER CREAM AGAINST ORGANIC IRRITANTS. F. FUCHS. (1955) *Derm. Wschr.*, 131, 195.

The development of a new proprietary barrier substance is reported. It is effective against organic solvents. It is a flexible substance which adheres to the skin as a film. Chemical details are not disclosed.
W. G. T.

ONYCHOMETRIC OBSERVATIONS. R. PFISTER and E. WEIRICH. (1951) *Derm. Wschr.*, 131, 219.

Methods for the measurement of nail growth, nail curvature and size of lunula are described. The results are plotted as onychodiagrams.
W. G. T.

THE ALKALI RESISTANCE OF THE HUMAN SKIN. E. SCHULTHEISS. (1951) *Derm. Wschr.*, 131, 227.

The alkali resistance of normal and diseased skin is measured in three places. In the normal it is greatest on the extensor aspect of the thigh, and least in the clavicular region, with the flexor aspect of the forearm giving intermediate values. In skin patients the values are generally lowered and the differences between the three test areas are less significant and statistically unimportant. It was hoped that the test would provide a means of differentiation between different groups of eczema. This is not possible. It is of interest that infants suffering from eczema already show a low alkali resistance.
W. G. T.

ON MIXED TUMOURS OF THE SCALP. L. ARZT. (1955) *Derm. Wschr.*, 131, 244.

Two cases of mixed tumour of the scalp are reported. The histological similarity to mixed parotid tumours is stressed and the question of the histogenesis is discussed in detail. Since the tumours occurred on the scalp a salivary origin is out of the question. It is more likely that mixed salivary tumours are the result of early developmental abnormalities of the salivary glands. There is no reason why such early developmental errors should not occasionally occur in other parts of the body, though it might perhaps be expected to occur more frequently in the neighbourhood of the branchial clefts, where most complicated processes take place.
W. G. T.

LUPOID LESIONS BASED ON BRANCHIOGENIC DEVELOPMENTAL ABNORMALITIES.K. HALTER. (1955) *Derm. Wschr.*, **131**, 248.

In 1931 Gottron showed a case of an infective process developing in connection with a congenital auricular fistula. Though the clinical features resembled lupus vulgaris, no histological confirmation of this diagnosis was obtained. Erroneously this case was later published in Nekam's *Atlas* as *Tuberculosis luposa branchiogenes*.

A further example in a girl aged 9 is now reported. The condition was bilateral and clinically suggested lupus vulgaris. Even the findings on glass pressure suggested this diagnosis. The histology showed a typical foreign body granuloma. Montgomery has stated that blockage and infection of congenital fistulae will lead to destruction of the duct, which may not be found in histological preparations, and this process may be the stimulus for the foreign body reaction.

W. G. T.

SO-CALLED SARCOMATOSIS CUTIS IN INFANCY. W. GERTLER and A. SCHIMPF. (1955)*Derm. Wschr.*, **131**, 252.

The clinical and histological details of two cases of profuse brownish red nodular eruption in infants are reported. Clinically the appearances resembled juvenile xanthoma. Histologically one appeared to be a round-cell the other a fibrosarcoma. One case was treated with x-rays which did not appear to have more than a slight effect on the lesions. This was followed by spontaneous recovery. The second case is well on the way to recovery without treatment. In both there were no constitutional symptoms and no other abnormal findings. In one the buccal mucosa, palms and soles of feet were affected.

It is probable that these are cases of lymphadenosis cutis benigna with a pseudo-sarcomatous histology.

W. G. T.

FOX-FORDYCE DISEASE AND ADRENO-GENITAL SYNDROME. W. NIKOLOWSKI and R.WITTIG. (1955) *Derm. Wschr.*, **131**, 263

Two hundred and seven cases of Fox-Fordyce disease could be found in the literature. Of these 186 occurred in women. Ovarian disturbances were found or suspected in 43 cases, the thyroid was affected in 16 and the suprarenals in 5 cases. A case of a girl aged 19 is reported who showed marked virilism with a 17-ketosteroid excretion of 41.6 mg. in 24 hours. It is assumed that a temporary adrenocortical hypersecretion can produce Fox-Fordyce disease. This hypothesis is supported by the observation which has been confirmed by the authors that vitamin E has a favourable effect on the disease.

W. G. T.

ON THE CLINICAL FEATURES OF HYPERTENSIVE LEG ULCERS. R. SCHMITZ. (1955)*Derm. Wschr.*, **131**, 271.

From the group of supra-malleolar non-varicose leg ulcers Martorell (1945) separated the hypertensive ulcer, which usually occurs in women, tends to be bilateral and usually is very painful.

The first sign is an ecchymosis which may rapidly break down and result in an ulcer or may gradually be absorbed. Two cases of unilateral ulcer are reported in which other factors, such as a previous fracture and a hemiplegia, seem to have predisposed to the ulceration. A comparison of the clinical manifestation of hypertensive ulceration and Majocchi's purpura follows.

W. G. T.

ECTODERMAL DYSPLASIA SHOWING PILI TORTI, OCULAR MANIFESTATIONS AND DISTURBANCE OF SWEAT SECRETION. H. C. FRIEDERICH and R. SEITZ. (1955) *Derm. Wschr.*, **131**, 277.

Many cases of pili torti have been reported since the term was first used by Galewsky and Ronchese in 1932, but Touraine had never seen this abnormality in conjunction with other ectodermal malformations. The authors' case is a 16-year-old girl with sparse twisted hair, fissured nails of thumbs and big toes, diminished sweat production on palms, soles and in axillae, and the lachrymal points are replaced by shallow pits. There was reduced tear secretion on the right and none on the left. Both corneae showed erosions.

W. G. T.

THE PSYCHOLOGICAL ASPECTS OF INSURANCE REPORTS ON SKIN PATIENTS. H. HERMANN. (1955) *Derm. Wschr.*, **131**, 291.

Psychological moments are not only of importance in the patients to be reported on, but the psychological attitude of the specialist to the patient can materially influence the report.

W. G. T.

PSEUDOEPITHELIOMATA OF THE SKIN. A. WISKEMANN. (1955) *Derm. Wschr.*, **131**, 296.

The author's attention has been drawn to new formations of the skin with a benign course but a histology suggesting squamous carcinoma. Two varieties are mentioned, molluscum sebaceum and pseudo-recurrence of an epithelioma after x-ray therapy. Despite different clinical features the course of these two conditions is very similar, resulting in a disappearance of the lesion in the course of a few weeks. Whether or not such lesions require treatment depends on careful consideration of the clinical and histological features, both of which can be misleading.

W. G. T.

PEMPHIGUS VULGARIS SUPERVENING ON LICHEN PLANUS. R. RICHTER and L. TAT. (1955) *Derm. Wschr.*, **131**, 337.

A case of lichen planus which had been seen on two occasions presented with lesions both of lichen planus and of pemphigus vulgaris on a third occasion, one year after the first visit. The lichen planus lesions disappeared rapidly after admission to hospital and before institution of treatment with ACTH. The diagnosis of lichen planus had been confirmed by histology and that of pemphigus by cytodiagnosis.

Areas which had been affected by lichen planus were spared by the bullae of pemphigus.

It is assumed that these are two separate diseases of virus origin, the more serious disease virus causing healing of the less severe.

W. G. T.

CONTRIBUTION TO THE PROBLEM OF "LIPOMELANIC RETICULOSIS". H. LINDNER and K. H. KÄRCHER. (1955) *Derm. Wschr.*, **131**, 385.

Two cases of erythrodermia with lymphatic enlargement have been investigated in great detail. The typical changes in the lymph nodes are nothing but the direct result of altered metabolic processes occurring in chronic skin diseases. The condition is therefore not a separate clinical entity, and it is advisable to remove it from the group of reticulosis.

W. G. T.

A SPECIFIC VACCINE THERAPY FOR PSORIASIS. T. BENEDEK. (1955) *Derm. Wschr.*, **131**, 414.

A parasitic origin of psoriasis has been stipulated as early as the 'seventies of the last century. Unna, Neisser and Jadassohn all believed in this aetiology, but the theory could only be proved as the result of the prolonged efforts of the author.

In 1927 he discovered *B. endoparasiticus* in man. In psoriasis this organism is always present in large quantities in the blood. It can also be obtained from a cantharides blister and shown in histological preparations.

The infection is acquired through the placenta. Psoriasis is a bacterio-allergic inflammatory process and is most suitable for treatment by desensitization with a specific vaccine. 0.1 c.c. of a 1-in-1 million dilution of *B. endoparasiticus*, type S, is injected twice weekly. The treatment is effective irrespective of age, sex or race. Thirty-four cases have been treated so far.

Hypersensitivity to the vaccine occurs and results in exacerbations.

Twenty to twenty-five injections are usually sufficient to clear the lesions.

As psoriasis is a manifestation of permanent endoparasitism this treatment can only bring about temporary relief and not a permanent cure. Repeated courses of vaccine therapy are therefore likely to be required.

W. G. T.

THE SERUM VITAMIN E CONTENT OF VARIOUS DERMATOSES. F. FEGELER and R. BECKMANN. (1955) *Derm. Wschr.*, **131**, 433.

Many skin conditions have been treated with vitamin E, but detailed investigation of serum vitamin E levels has not so far been carried out.

Fasting values in 115 cases of dermatoses varying from acne vulgaris to leg ulcers were ascertained. The average was a good deal below figures for normal subjects. Doses below 100 mg. daily have no effect on the serum level and 600 mg. daily are required at least initially. There was no correlation between the degree of lack of serum vitamin E and severity of the skin manifestation, though those with low values showed a more significant rise when treatment had been given.

W. G. T.

SEVERE MENTAL DISTURBANCE AFTER TREATMENT OF LUPUS ERYTHEMATOSUS WITH MEPACRINE. G. WESENER. (1955) *Derm. Wschr.*, **131**, 457.

A case of serious mental disturbance in a patient who received 1.7 g. of mepacrine in 6 days is described. The patient had to be admitted to a mental institution as she had attacked her child.

Recovery occurred in 3 weeks. There was only minimal staining of the skin from mepacrine and the lupus erythematosus had completely healed after discharge from the mental hospital.

The literature dealing with mepacrine reactions and with psychoses occurring during mepacrine treatment of malaria is reviewed.

W. G. T.

THE SOCIAL INCIDENCE OF LUPUS VULGARIS. HARTUNG, JANSSON, SCHÄFER and WARTMANN. (1955) *Derm. Wschr.*, **131**, 461.

The authors have analysed 6500 cases of lupus vulgaris according to the social station of the patient at the time of onset. The incidence of the disease is lower and the onset later in the higher income groups. For instance, 143 cases in unskilled workers started before the age of 20, 98 between 21 and 50 and 6 between 51 and 70, whereas there were only 10 cases in professional class patients before the age of 20, 18 between 21 and 50 and 3 between 51 and 70.

W. G. T.

THE AETIOLOGY AND PATHOLOGY OF LIPOIDOSIS CUTIS ET MUCOSAE. B. BATSCHWAROFF, KR. BALABANOFF and A. STOJANOFF. (1955) *Derm. Wschr.*, **131**, 466.

The authors have observed 8 cases of this disease in Bulgaria. Two cases were brothers, two others brother and sister. Other cases which were not seen have occurred in the families of two other cases. In all patients the disease had been present since early childhood. All got worse in spring and improved considerably in autumn and winter. Skin manifestations could be produced a few hours after exposure to sunlight. It is therefore thought that light is a definite aetiological factor in this disease. This does not, of course, explain the mucosal lesions which were thought to be the result of minor trauma.

Porphyrin studies could not be carried out for technical reasons.

Histology was not uniform, but hyalinization of the corium was present in all cases, whereas lipid infiltration was not always seen. It occurred in the brother but was absent in the sister, though their clinical pictures were identical. In another case it was demonstrated in a biopsy from the face, but not in skin removed from the hand.

W. G. T.

FURTHER CONTRIBUTIONS TO THE VASCULAR PHYSIOLOGY OF ATOPIC DERMATITIS.

R. G. WEBER, G. M. ROTH and R. R. KIERLAND. (1955) *J. invest. Derm.*, **24**, 19

Confirms previous (1952) observations of the same authors (*J. invest. Derm.*, **18**, 37) adding that the circulatory peculiarity also affects asthmatics, and that it does not extend to the ante-cubital flexures.

The illustrative graphs fail to create an immediate impression of the important differences, and once more a contrastible pair of them have been made to occupy opposite sides of a leaf.

J. H. T. D.

THE SENILE NAIL. B. L. LEWIS and H. MONTGOMERY. (1955) *J. invest. Derm.*, **24**, 11.

This paper shows the need for a reformed anatomical vocabulary of localization. It may sound a little odd for a distal bony phalanx to be said to have a ventral surface; but no serious confusion is threatened thereby as in the sad cases of "transversely (perpendicular to the long axis of the finger)" or "longitudinally (sagittally and perpendicular to what might be termed the plane of the nail)". Surely "perpendicular" (apart from its conventional use in geometry) can only mean at right angles to the horizon and in strict anatomical usage this would be in the long axis of the digit. Again the meaning of "... it has been shown that nail is formed from above as well as below in the most proximal region of nail generation ..." cannot be immediately obvious to every reader. But one of the authors even brings the 4th dimension into the general confusion by saying (in discussion) that "... one might expect to see senile changes in the nails of children"! However, to make up for it we are given some nice new technical terms: "roseate nail"—that portion of the nail between (the distal margin of) the lunula and the (proximal margin of) the white band at the free edge of the nail. (brackets are supplied by reviewer in whose nails the only white band is that which goes black when he has to mend a puncture); and "pertinax bodies"—refers to the conspicuous cellular components forming a galaxy in the nail unit. They are retained shrunken nuclei with perinuclear eosinophilic material or vacuolization or both."

Finally we learn that the senile nail is not seen more frequently in chronologically aged persons than are other evidences of senility.

J. H. T. D